IGF INTERGOVERNMENTAL FORUM on Mining, Minerals, Metals and Sustainable Development

Critical Raw Materials: A production and trade outlook

Perspectives from African, Caribbean, and Pacific States

Secretariat hosted by IISD

Secretariat funded by Canada, Kingdom of the Netherlands

Published by the International Institute for Sustainable Development

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Critical Raw Materials: A production and trade outlook
Perspectives from African, Caribbean, and Pacific States

August 2024

Written by Isabelle Ramdoo, Deputy Director of the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development, International Institute for Sustainable Development.

This background paper is designed to inform a comprehensive position paper to support the OACPS Secretariat in developing its critical raw materials strategies.

Ultimately, this report is the product of its author(s). They alone are responsible for any errors or omissions, as well as for the report's findings and recommendations.

Recommended citation

Ramdoo, I. (2024). *Critical Raw Materials: A production and trade outlook. Perspectives from Africa, the Caribbean, and the Pacific States.* International Institute for Sustainable Development.

Acknowledgements

This background paper on *Critical Raw Materials: A Production and Trade Outlook; Perspectives from African, Caribbean, and Pacific States* is the outcome of a collaborative effort between the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF) and the Organisation of African, Caribbean, and Pacific States (OACPS) Secretariat.

The publication was created through the dedication, expertise, and commitment of the IGF and OACPS staff to produce a comprehensive analysis of the production and trade dynamics of critical raw materials in the region. Special thanks to Isabelle Ramdoo, the lead author of the report; Junior Lodge, Assistant Secretary General of the Secretariat of OACPS, for his leadership throughout the process; Yvonne Chileshe, Expert, Commodities and Value Chains Development, OACPS, whose insights were instrumental in the research and compilation of this report; and Grégoire Bellois, Anthony Brand, and Atu Kayombo for their invaluable contributions to the report. The collaboration and shared vision between the two organizations was essential to the successful completion of this report.

Our sincere appreciation also goes to OACPS Ministers of Mining, Ambassadors, and Senior Officials for their invaluable support, insights, and guidance throughout this project.

We extend our heartfelt gratitude to everyone who contributed to the creation of this report. We acknowledge the contributions of the various stakeholders, including government officials and country experts, whose input and feedback enriched the final report.

Foreword

In an era defined by the shift toward a low-carbon economy, rapid technological advancements, and an increasing emphasis on sustainability, the strategic importance of critical raw materials has never been more apparent. These materials form the backbone of numerous high-tech industries, from renewable energy to advanced manufacturing and digital technologies. As such, the capacity to produce and trade these materials effectively is crucial for economic development and technological innovation.

For producing countries with less advanced industrial capabilities, critical raw materials present a significant opportunity to steer future economic growth and distribute benefits to local populations. These opportunities involve increasing fiscal revenues, moving up the value chain, creating resilient domestic and regional supply chains for renewable and digital technologies, and attracting investments in innovation and research and development hubs to support high-tech industries, among other benefits.

Member countries of the Organisation of the African, Caribbean, and Pacific States (OACPS)–many of which are also members of the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF)–include many significant mineral producing nations. In Africa, the Democratic Republic of the Congo is the largest global producer of cobalt and tantalum and the third-largest global producer of copper. Madagascar is the third-largest global producer of graphite. In the Caribbean, Cuba is the fifth-largest global producer of cobalt and 10th-largest global nickel producer, while Jamaica is the eighth-largest global bauxite producer. In the Pacific, Papua New Guinea produces copper, nickel, cobalt, and chromium.

However, unlocking the full potential of OACPS countries' mineral endowment and current position in the value chains requires both an understanding of the geological and economic landscape and a concerted effort to address the challenges and leverage the opportunities presented by the global market dynamics. Importantly, it is crucial to move beyond raw materials production and make strategic moves to add more value to unprocessed raw materials. This remains a more urgent imperative in light of OACPS countries' collective aspirations to escape the cycle of serial commodity dependence by advancing sustainable and inclusive economic development.

This IGF-OACPS background document is designed to inform a comprehensive position paper to support the Secretariat of the OACPS in developing its critical raw materials strategies. It provides a thorough scan of the current state of production and trade of critical raw materials in the three regions and the global dynamics driving strategies to secure access to these raw materials, offering key insights that are vital for policy formulation and strategic planning.

This background paper highlights the need for enhanced regional cooperation and investment in sustainable mining practices and outlines a comprehensive framework of key policy and support interventions aimed at enabling OACPS countries to navigate the challenges and leverage opportunities in the CRM sector. These elements are central in ensuring that OACPS countries can maximize the benefits derived from their natural resources while contributing to global supply chains in a responsible and sustainable manner. Such pursuits also entail using OACPS stocks of critical raw materials to advance their countries' respective green and digital transitions.

Moreover, this report underscores the importance of creating an enabling business environment, fostering public–private partnerships, and ensuring transparent and robust regulatory frameworks. By doing so, the OACPS states can attract the necessary investments and technologies to develop their critical raw materials sectors effectively, enabling them to take advantage of the window of opportunity offered by the current demand.

As we look to the future, the insights and recommendations provided in this report will serve as a strategic guide for policy-makers, industry stakeholders, and international partners. Together, we can build resilient and sustainable mineral supply chains that not only drive economic growth but also support the broader objectives of addressing climate change, environmental stewardship, and social development in OACPS countries and regions.

Greg Radford
Director, The Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development

Junior Lodge
Assistant Secretary General, Secretariat of the Organisation of Africa, Caribbean and Pacific States

Executive Summary

The Organisation of African, Caribbean, and Pacific States (OACPS) is at a critical juncture where the strategic management of critical raw materials (CRMs) can significantly influence its member states' economic trajectories.

With many common member countries, the OACPS partnered with the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF) to produce this background paper. It outlines the state of play of the current production, trade, and regulatory landscape and aims to inform a position paper that will outline a set of key policy and support interventions to enable OACPS countries to navigate the challenges and leverage opportunities in the CRM sector.

CRMs are vital for the economic development of OACPS countries due to their critical role in countries' development strategies and their importance for modern technologies and renewable energy systems.

Section 2 highlights the role of commodities in OACPS countries. In 2023, the United Nations Conference on Trade and Development estimated that 65 African, Caribbean, and Pacific states relied on commodities for more than 50% of their export earnings,[1] the most extreme case being South Sudan, where commodities accounted for 99.9% of the country's exports. Many are significant producers of CRMs, which are important feedstocks for the energy and digital transitions.

Section 3 provides definitions and highlights the key drivers behind the rising demand for CRMs. The International Energy Agency estimates that demand for CRMs is set to grow significantly in the coming years as the global shift toward green and digital economies accelerates. As a result, international focus on CRMs will intensify, presenting unique opportunities and challenges for OACPS countries, as well as key challenges in CRM supply chains.

Section 4 presents an overview of CRMs in OACPS countries. Data show that many OACPS countries are well endowed with several CRMs. Africa, in particular, produces over 60% of CRMs, such as platinum groups of metals, cobalt, manganese, and chromium, and has significant potential for many others, such as lithium, graphite, bauxite, and nickel, among others.

To capitalize on opportunities from increased demand, OACPS countries need to move beyond the traditional economic models and develop value-added industries locally while increasing collaboration with global supply chain actors. At the domestic and regional levels, this involves enhancing local processing capacities, establishing strategic global partnerships, and diversifying economic bases to mitigate the risks associated with CRM market volatility.

As matters currently stand, while production is fairly well established, countries face serious imbalances in other segments of the mining value chains. Trade data point to the fact that some countries have beneficiation capabilities in the early stage of value addition, but those are largely insufficient, meaning that significant value is lost to midstream facilities outside OACPS countries. China represents, on average, about half of export markets for CRMs.

[1] According to the United Nations Conference on Trade and Development, a country is considered commodity dependent if more than 60% of its merchandise export value comes from commodities.

To understand the conditions of trade and investment in OACPS countries, Section 5 looks at the regulatory frameworks governing CRMs. A brief overview of relevant policies and frameworks at the domestic and regional levels is provided, pointing out the dynamics at play, where an increasing number of countries has recently designed CRM policies (although different terminologies are used). The African continent is on the move, with its own green minerals strategy in the making, which is a key milestone in building regional capabilities to move up mineral value chains.

The section also looks at industrial policies being adopted by OACPS key partners, namely the United States, the European Union, and China. These policies have international ramifications and are likely to impact OACPS countries' resource-based domestic and regional industrial policies. Finally, it looks at the intersection between new industrial policies around CRMs and multilateral trading systems.

Section 6 concludes by providing a few suggestions on how to navigate the global dynamics while safeguarding interests and addressing concerns. Three issues are raised. The first is the importance of leveraging the strength of a large group of countries to engage partners on political and strategic interests of mutual benefits. Second, it is important to place economic interests at the centre of partnerships to ensure that OACPS countries are not prevented from using their resources for their own development objectives but rather engage partners to support development objectives. Finally, it highlights the importance of managing social and environmental challenges to ensure that the extraction and processing of CRMs are aligned with environmental sustainability and social welfare standards. This priority includes implementing and enforcing strict environmental regulations, safeguarding the rights and participation of local communities, ensuring fair and transparent benefit-sharing mechanisms, and investing in communities affected by mining operations.

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Acronyms

ACP	African, Caribbean, and Pacific states
AfCFTA	African Continental Free Trade Area
AGOA	Africa Growth and Opportunity Act
AMGS	African Green Minerals Strategy
AMV	Africa Mining Vision
ASCM	Agreement on Subsidies and Countervailing Measures
BIT	bilateral investment treaty
CARICOM	Caribbean Community
CET	Common External Tariff
CFC	cobalt-rich ferromanganese crusts
CHIPS Act	Creating Helpful Incentives to Produce Semiconductors Act
CRMA	Critical Raw Materials Act
CRM	critical raw materials
DFQF	duty free and quota free
DRC	Democratic Republic of the Congo
EAC	East African Community
EBA	Everything But Arms
ESA	Eastern and Southern Africa
EC	European Commission
ECOWAS	Economic Commission for West African States
EEZ	Exclusive Economic Zone
EPA	Economic Partnership Agreement
EU	European Union
EV	electric vehicle
FTA	Free Trade Agreement
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariff and Trade
GHG	greenhouse gas
GSP	Generalized System of Preferences
HHI	Herfindahl-Hirschman Index
HS	Harmonized System
IEA	International Energy Agency
IGF	Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development
IRA	Inflation Reduction Act

ISA	International Seabed Authority
ITC	International Trade Centre
LDC	least developed countrie
MFN	most-favoured nation
MOU	Memorandum of Understanding
MSP	Minerals Security Partnership
OACPS	Organisation of African, Caribbean, and Pacific States
PGM	platinum-group metals
PMN	polymetallic (manganese) nodule
PMS	polymetallic sulphide
PNG	Papua New Guinea
R&D	research and development
RECs	Regional Economic Communities
REE	rare-earth element
ROW	rest of the world
SADC	Southern African Development Community
SIDS	Small Islands Developing States
TIFA	Trade and Investment Framework Agreements
TRIMs Agreement	Agreement on Trade-Related Investment Measures
UEMOA	Union Economique et Monetaire Ouest Africain
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Committee for Trade and Development
WTO	World Trade Organization

1.0 Introduction

Critical raw materials (CRMs) are essential for the functioning and integrity of key industries and technologies, particularly those associated with the energy and digital transitions. Raw materials such as copper, nickel, rare-earth elements (REE), lithium, and cobalt are pivotal for the manufacture of high-tech devices, renewable energy systems, electric vehicles, and energy storage solutions. However, they are at a high risk of supply shortage and have significant impacts on delaying energy transition plans if their supply is constrained.

Many countries that are members of the Organisation of African, Caribbean, and Pacific States (OACPS) are among the top producers of CRMs such as copper, cobalt, manganese, platinum-group metals (PGMs), and graphite. Although many countries have significant proven reserves, many are largely under-explored, which gives them an edge in future supply chains.

The growing demand for CRMs provides OACPS producer countries with significant opportunities to leverage their raw materials for broader socio-economic benefits. These include opportunities to capture higher fiscal revenues, move up the value chain, develop resilient domestic and regional supply chains around renewable and digital technologies, and attract investments in innovation and research and development (R&D) hubs to service high-tech industries, among others.

Exploiting raw materials sustainably and equitably also presents challenges that must be addressed through solid governance frameworks and the enforcement of high environmental and social standards. As increased supply comes into production, OACPS countries will have to manage potential trade-offs between increased production, on the one hand, and environmental and social risks, on the other.

Geopolitically, the distribution and control of CRMs are central to current international power dynamics. The concentration of CRM resources and processing facilities in a few countries creates vulnerabilities and dependencies for importing nations. While this presents an opportunity for OACPS countries to play a more influential role in international relations, it also exposes them to risks associated with fluctuating commodity prices, foreign investment pressures, and geopolitical tactics and rivalries.

For OACPS countries, these global dynamics and developmental opportunities highlight the importance of the strategic management of their resources, including through investment in local processing capacities, environmental stewardship, and the negotiation of equitable trade terms. Additionally, it underscores the importance of international cooperation and multilateral frameworks to ensure a stable, sustainable, and equitable global CRM market.

2.0 The Role of Commodities in OACPS

OACPS countries have very different economic landscapes due to their sizes, geographical features (including small islands and landlocked countries), levels of natural resource endowment, economic structures, etc. Many member states are highly dependent on primary commodity exports—typically mineral, fuel, and/or agricultural commodities—and rely on few external markets for export revenues.

Globally, commodity dependence, which is prevalent in Africa, Oceania, and South America, tends to impact a disproportionate share of countries with special features: 81% of landlocked developing countries, 74% of least developed countries (LDCs) and 61% of Small Island Developing States (SIDS) are commodity dependent (United Nations Committee for Trade and Development [UNCTAD], 2023).

According to UNCTAD's 2023 *Commodities and Development Report*, 65 ACP countries relied on commodities for more than 50% of their export earnings.[2] The most extreme case is South Sudan, where commodities accounted for 99.9% of the country's exports (energy alone accounted for 93.8%, mining represented 3.1%, and agriculture made up 2.9% of the country's exports).

The undiversified economic base is a major source of vulnerability, making commodity-dependent countries particularly susceptible to exogenous economic shocks, such as price volatility and market disruptions. Frequent commodity price fluctuations have significantly impacted OACPS fiscal and export revenues and weakened their ability to invest in new growth poles. According to UNCTAD (2023), between 2019 and 2021, commodity prices were extremely volatile. This was largely due to disruptions during the COVID-19 pandemic and the uncertainties that prevailed despite the subsequent recovery. Commodity price hikes continued in 2022 and early 2023 as a result of growing geopolitical tensions, Russia's war in Ukraine, and changes in international financial conditions resulting from growing inflationary pressures (UNCTAD, 2023).

As the demand for CRMs increases, the situations of countries that already face a high dependency on commodity exports may be further aggravated. It is therefore imperative that affected OACPS countries diversify their production and export base to reduce vulnerability,

[2] According to UNCTAD, a country is considered commodity dependent if more than 60% of its merchandise export value comes from commodities.

as prices and markets are expected to remain highly volatile in the future. Leveraging CRMs for industrial development to take advantage of the growing market for energy and digital technologies is a strategic pathway to follow. Complementary to building stronger and more diversified economic structures, other areas, such as macro-prudential and effective fiscal policies and financial innovation, need specific attention.

3.0 CRM: Definition and relevance

3.1 What is Meant by "Criticality"?

There is no standard definition of "criticality," although there are similarities in the way countries define what they consider critical from economic and political standpoints. Criticality is associated with the assessment and management of risks, sources of vulnerabilities and choke points in the production of raw materials, and related weaknesses along the supply chain of products for which they are indispensable. **Appendix A** provides an overview of terminologies used by different countries across the world, and **Appendix B** maps out the list of CRMs identified by key industrialized and emerging economies.[3] Some countries have identified minerals they consider critical from energy, digital, industrial, and defence perspectives—for example, the United States has identified 50 (USGS, 2022).

The criticality of a raw material does not refer to its "physical property." In that regard, it is a subjective terminology that is generally used when stakeholders want to call (political) attention to the security of supply to access the mineral in question (see Hendriawardani & Ramdoo, 2022; Ramdoo et al., 2024). The following elements are worth considering:

1. Criticality is a *relative* concept, and it depends on who is asking. In defining what raw materials are critical, countries that do not produce (enough) raw materials consider issues such as their degree of dependence on imports, the economic importance for industrial use, risks of supply shortages, and geopolitical challenges, among others. Key producer countries consider their degree of reliance on fiscal and/or export revenues, their importance as industrial feedstocks, risks related to changes in demand due to technological changes, or the availability of substitutions as key criteria of criticality.
2. Criticality is *time sensitive*. Indicators evolve over time and are assessed differently in the short and long terms. What is critical today may not be critical in a few years because new sources of production may emerge at the national level or technology may change, requiring different volumes of the mineral in question or different sets of minerals altogether. For example, with current technologies, a conventional internal

[3] In 2023, the International Energy Agency (IEA) identified 35 countries, covering 450 policies regarding critical minerals (IEA, n.d.).

combustion engine car requires, on average, 25 kg of copper. But the move toward e-mobility is more copper intensive. For an equivalent size of vehicle, a hybrid car requires, on average, 50 kg of copper, while an electric vehicle needs 75 kg.

3. Criticality assessments vary significantly *across countries* (from economic, political, or military standpoints), economic sectors (e.g., for industrial needs in sectors such as renewable energy and digital technologies), or among specific companies, although they all share some common denominators, such as economic importance and supply risks.

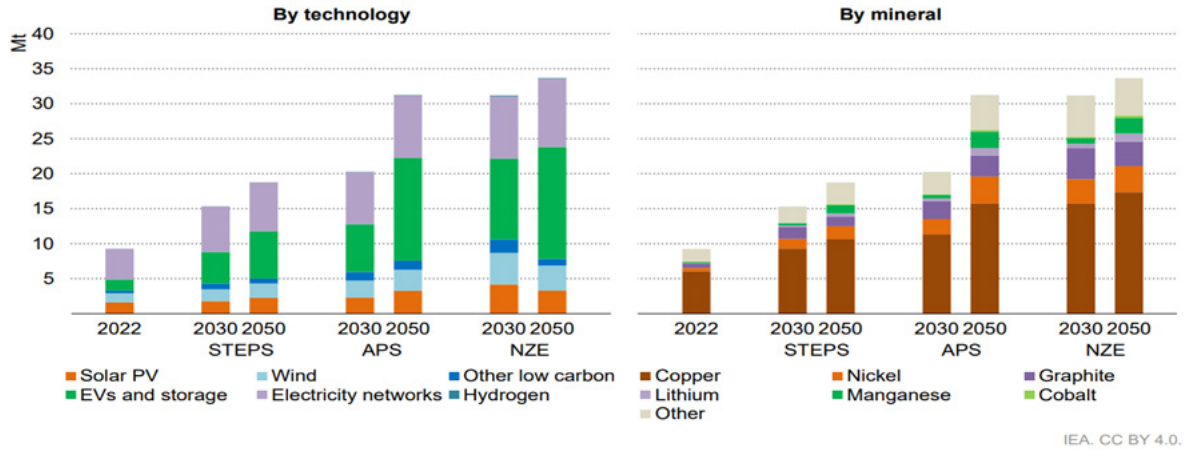
3.2 Relevance: Key technological drivers and societal needs

Many CRMs are common across technologies (see **Appendix C**), making them even more crucial as competition increases across industries to access them, further intensifying pressure to produce more and faster. While these drivers will reinforce each other and, hence, further accelerate demand, resource-rich countries and supply chain actors are expected to face growing pressure on the supply side, as access to new sources of supply takes time to respond to the growing demand.

3.2.1 Deployment of Energy Transition Technologies

In recent years, a conscious need to **transition to a low-carbon society** led countries to take concrete steps to develop technological solutions to meet the commitments made under the 2015 Paris Agreement. The agreement seeks to encourage changes to restrict "the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels" (United Nations, 2015, Art. 2.1). Low-carbon technologies are highly mineral intensive.

FIGURE 1. Mineral requirements for clean energy technologies by scenario



Notes: STEPS = Stated Policies Scenarios; APS = Announced Pledges Scenario; NZE = Net Zero Emissions by 2050 Scenario. Includes most of the minerals used in various clean energy technologies, but does not include steel and aluminium.

Source: IEA, 2023b (CC by 4.0).

The IEA estimates that if countries were to meet their climate pledges,[4] the average demand for key minerals and metals needed for renewable energy technologies would more than double by 2030 and increase by a factor of 3.5 by 2050 when compared to 2022, with expected growth of over 30% for copper, 55%–70% for nickel and cobalt, and almost 250% for lithium between 2022 and 2030. If plans to meet net-zero emissions by 2050 are to be realized by 2030, total demand for those minerals and metals is expected to increase by a factor of 3.5 when compared to 2022 (IEA, 2023c).

3.2.2 Digital Technologies and Related Infrastructure

Concurrently, the rapid deployment of the **Fourth Industrial Revolution**—characterized by the fusion of technologies, such as interconnectivity, artificial intelligence, robotics, and data analytics—has created the need for more minerals and metals, adding to the already growing demand from other sources mentioned above.

CRMs, such as REEs, nickel, cobalt, and lithium, are essential components in the production of high-tech devices, electronics, batteries, magnets, and semiconductors, among others. Most energy transition technologies are also highly dependent on digital technologies. Electric vehicles, for example, contain a suite of electronics and sensors, which means that the rising demand for e-mobility will also contribute to further increasing the demand for minerals and metals.

3.2.3 Demographics, Economic Development, and Societal Needs

The world's population is expected to increase by 25%, from 7.7 billion to nearly 10 billion by 2050. As a result, demand for CRMs will rise further due to higher demand for reliable and affordable power, housing, clean water, and sanitation, and, more broadly, for consumer goods and housing appliances. The rising population will also trigger rapid urbanization and organic economic development, which will in turn require large infrastructure investments and new industries, and hence the need for significant amounts of minerals and metals such as steel, aluminum, copper, and nickel for construction, transportation, and energy transmission, among others.

[4] The IEA Announced Pledge Scenario (APS) considers that all long-term emissions and energy access targets, including net-zero commitments, will be fully attained. This scenario results in a 50% probability of having a 1.7°C rise in temperature in 2100. The Stated Policies Scenario (STEPS) reflects current policies, whereas the Net Zero Emissions scenario reflects the mineral intensity of the global energy sector to achieve net-zero CO_2 emissions by 2050 (IEA, 2023c).

3.3 Key Challenges in CRM Supply Chains and Implications for OACPS Countries

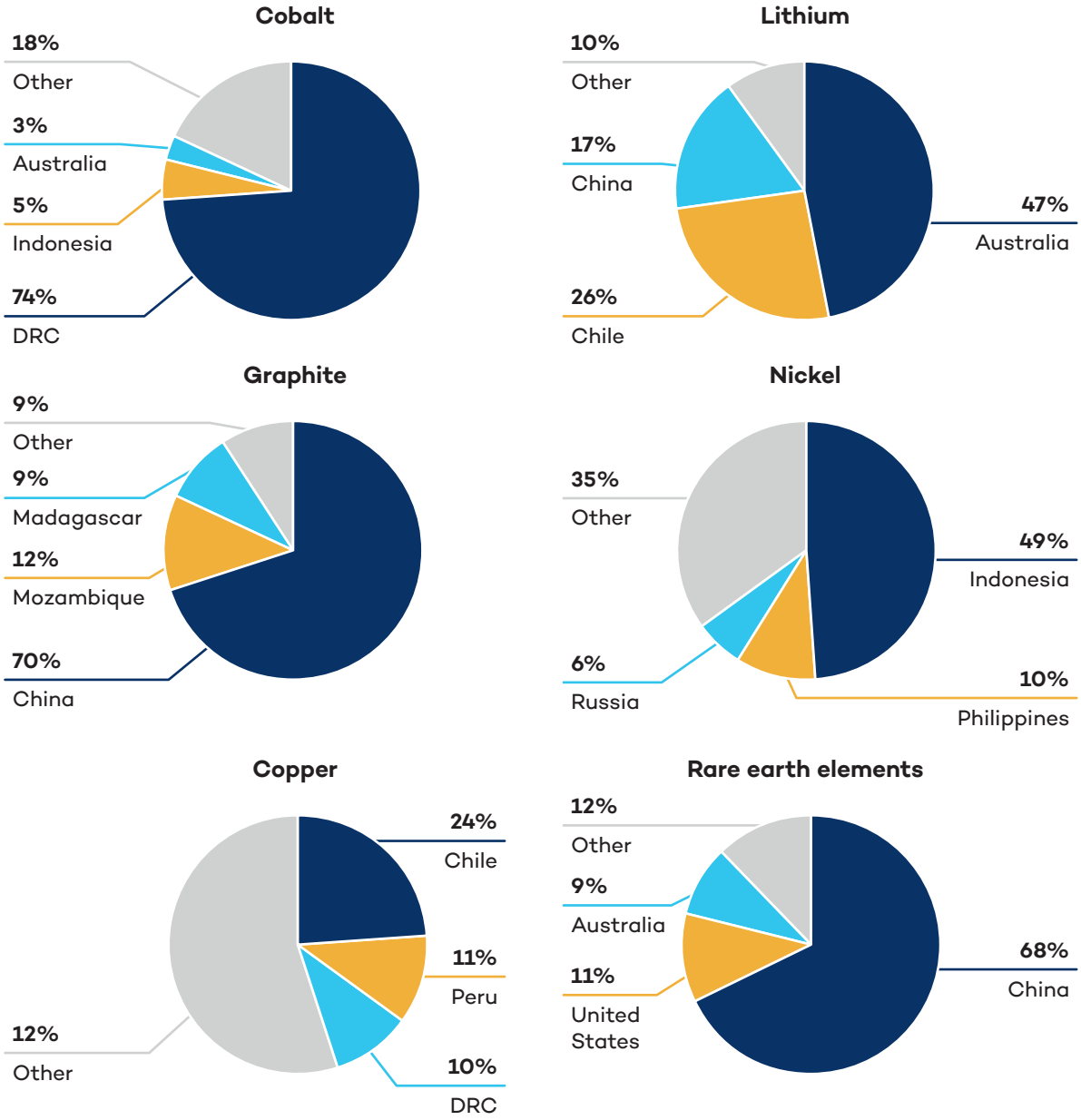
Forecasts indicate that the rising demand for CRMs is unlikely to be met by a corresponding pace in mineral supply, at least in the short-to-medium term. The mismatch between demand and supply is expected to create tensions in the market, with potential risks of supply chain disruptions. Some challenges impacting the supply of CRMs include

- **Long lead time from discovery to production.** According to S&P Global Market Intelligence (2024), it may take an average of 18 years for successful greenfield mining projects[5] to come onstream, mainly as a result of the permitting process requirements.
- **Short-term supply inelasticity.** About 60% of CRMs are mined as by-products of host metals, and hence are not mined for themselves (Bellois & Ramdoo, 2023). This has consequences for prices, which may be quite sticky during the sluggish period of supply adjustment.
- **Continued decline in ore quality observed across a range of minerals and metals.** According to the IEA, the average copper ore grade in Chile has decreased by 30% over the last 15 years (IEA, 2021).
- **Sustained under-investments in mining activities.**
- **High geographical concentration of mineral production** for some CRMs in a handful of countries, with a shift in concentration observed in midstream and downstream supply chains (mainly toward China), as highlighted in Figure 2.

Figures 2 and 3 represent the degree and shift in global production concentration for selected minerals.

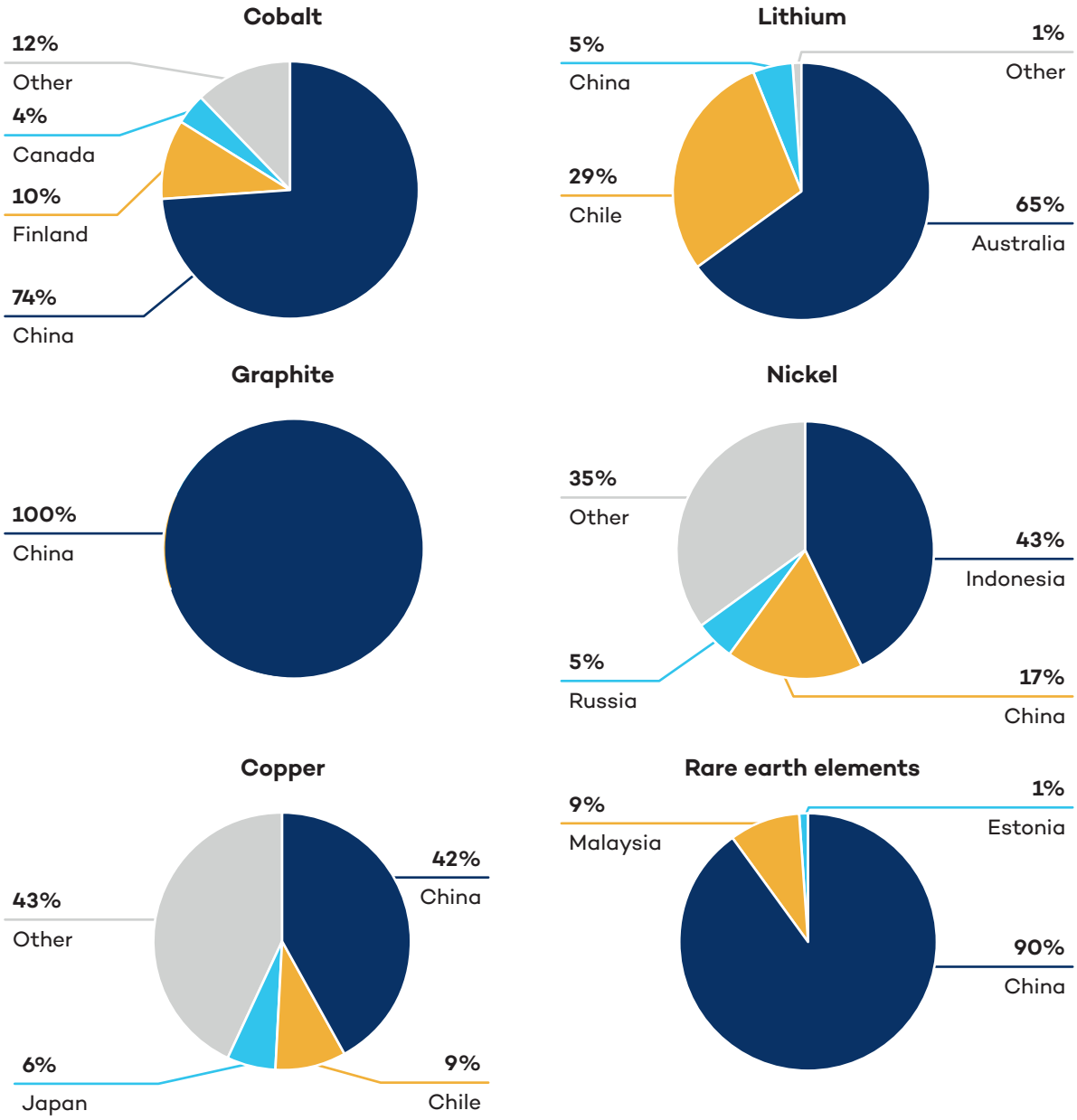
[5] Many greenfield projects never achieve the production stage because, while doing additional studies, some projects might appear non-economical (due to metallurgy being too complex, local opposition, grade not as good as expected, new regulations, etc.) and therefore investors may decide to postpone or abandon projects altogether.

FIGURE 2. Top 3 producing countries (% share of global production), 2022



Source: IEA, 2023c (CC by 4.0).

FIGURE 3. Top 3 processing countries (% share of global production), 2022



Source: IEA, 2023c (CC by 4.0).

The degree of and shift in concentration has different implications for different OACPS countries and their partners. They create multiple challenges across various parts of the complex CRM global supply chains and lay bare pinch points and risks, pointing to vulnerabilities that may undermine industrial and strategic sectors in several countries and industrial sectors (IEA, 2021; International Renewable Energy Agency, 2023).

For OACPS producing countries with a strong position in upstream supply chains (i.e., at the stage of production of raw minerals), minerals abound. The key concern is not the security of supply but rather a country's level of dependency on domestic production for fiscal and export revenues and capacity (or absence thereof) to develop backward and forward linkages with domestic industries.

The shift in concentration toward the midstream supply chain implies a limited choice of "clients" for OACPS producing countries, thus making them highly reliant on a handful of countries or even companies. This may limit their negotiating power with midstream facilities. The proliferation of long-term off-take and supply contracts between CRM-producing countries and midstream facilities illustrate that such risks are likely to increase as companies struggle to secure access to raw materials.

It is important to underscore that for net CRM importing countries, high concentrations of CRM in upstream and midstream markets are considered a major weakness. This is one of the main reasons driving their criticality assessments and their responses in anticipating and minimizing risks of supply disruption.

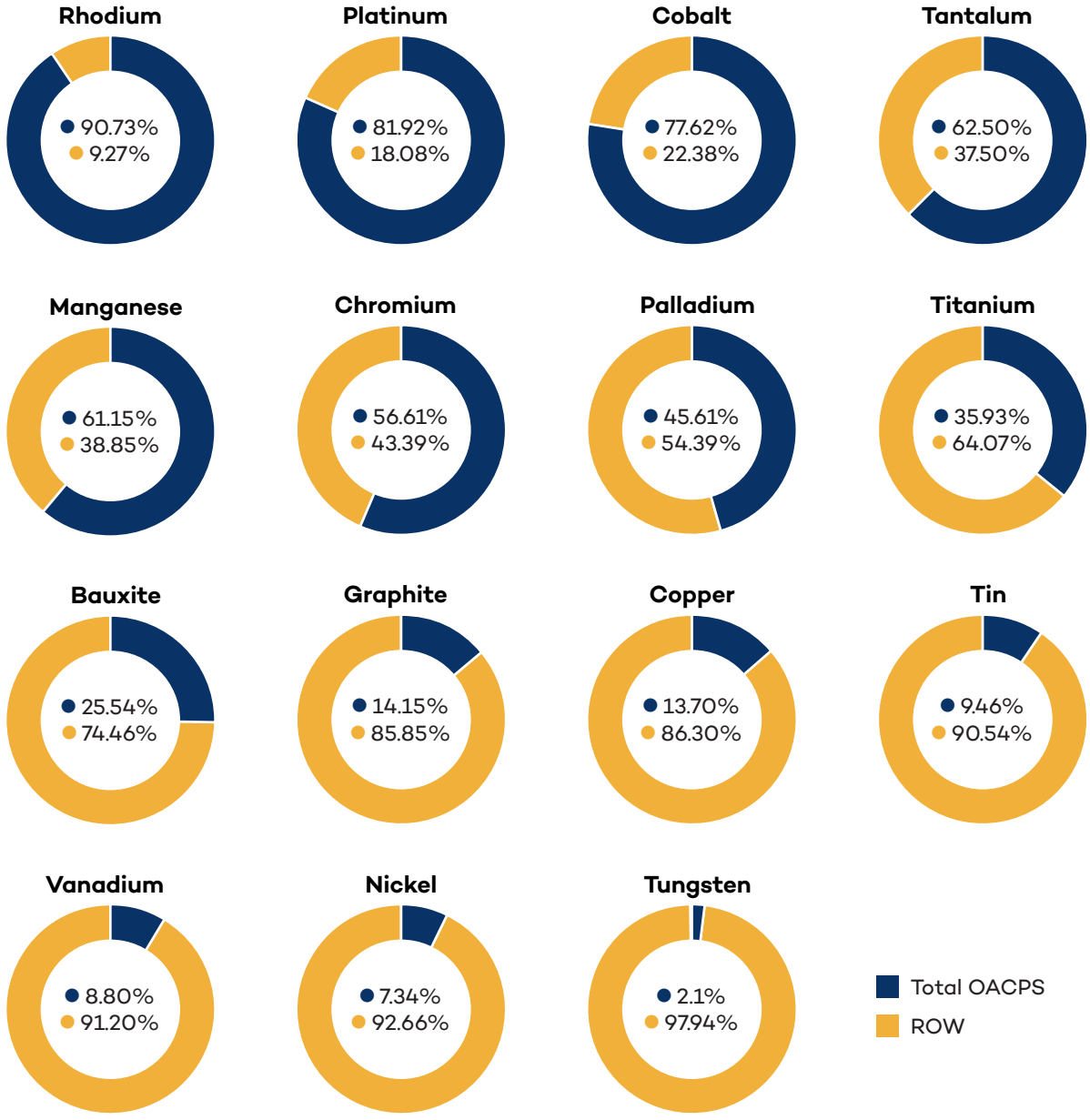
4.0 OACPS and Critical Raw Materials

4.1 OACPS and the Production of CRMs

OACPS countries are well endowed with several raw materials that their partners have identified as critical. Some countries are significant producers, while others have important proven reserves that are getting the attention of investors. Appendix D provides details of the share and rank of OACPS countries in the global production of CRMs.

Figure 4 shows the percentage share of all OACPS production in key CRMs (in blue) compared to the rest of the world (ROW, in grey) in 2021. The pie charts clearly highlight the importance of OACPS producers in some of the key metals, such as PGMs (which include platinum, palladium, and rhodium), cobalt, and manganese. With the increase in mining investments and new projects in the pipeline, such as bauxite in Guinea and new lithium and REE mining projects under development in several African countries, the share of OACPS countries in global production is expected to evolve rapidly.

FIGURE 4. Percentage share of all OACPS countries in global production of selected CRMs, 2021[6]



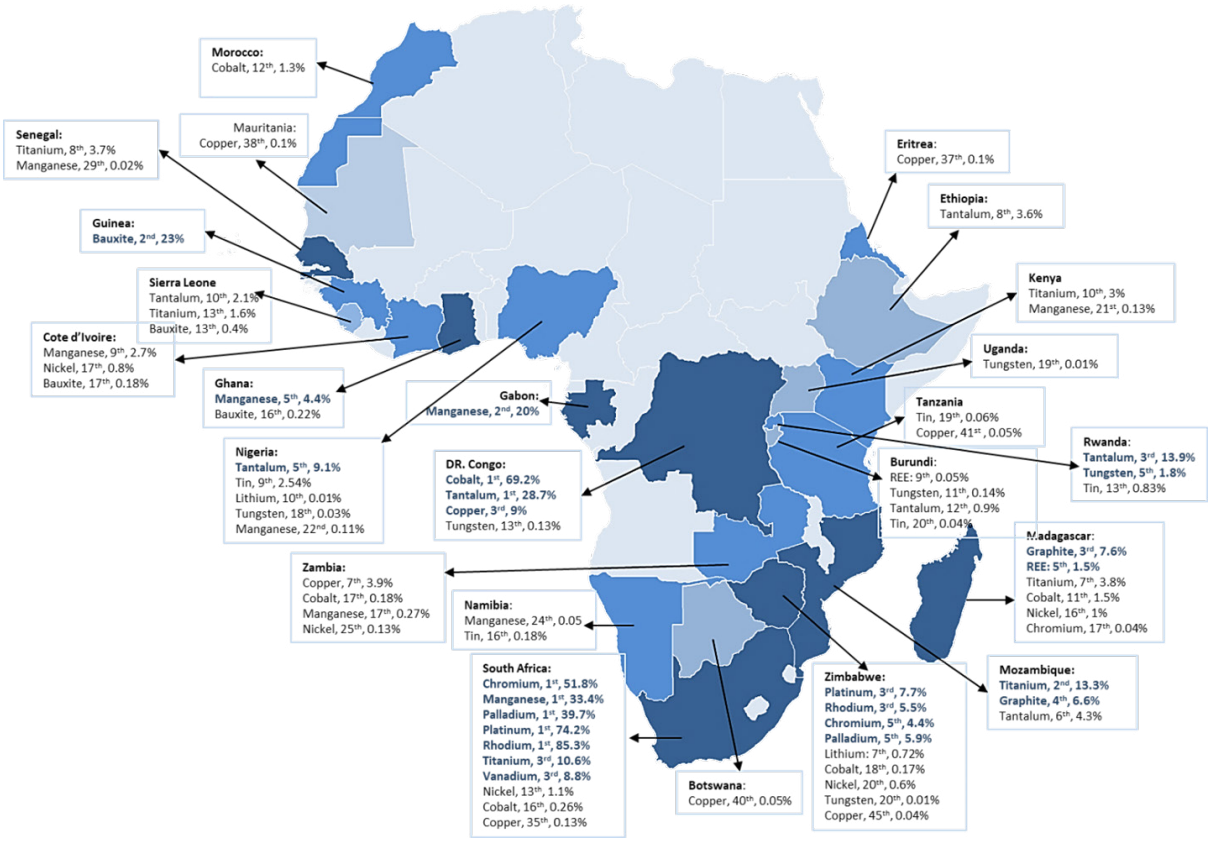
Note: ROW = rest of the world.
Source: World Mining Data, 2023.

[6] Although no longer an OACPS member, data for South Africa is included here, given the importance of the country's production in Africa and its leading role in the development of regional mineral value chains. South Africa is a member of a customs union (SACU) alongside four other OACPS member countries. It is also party to an economic partnership agreement with the European Union (EU), alongside some OACPS countries.

4.2 Regional Outlook

The African continent is home to over 60 minerals and metals, and its countries play a major role in the production of key CRMs. Figure 5 highlights some of the key producers: data highlight their rank as well as their percentage of production in global production. Countries in dark blue play a particularly important role, with some of them ranked in the top 5 global producers.

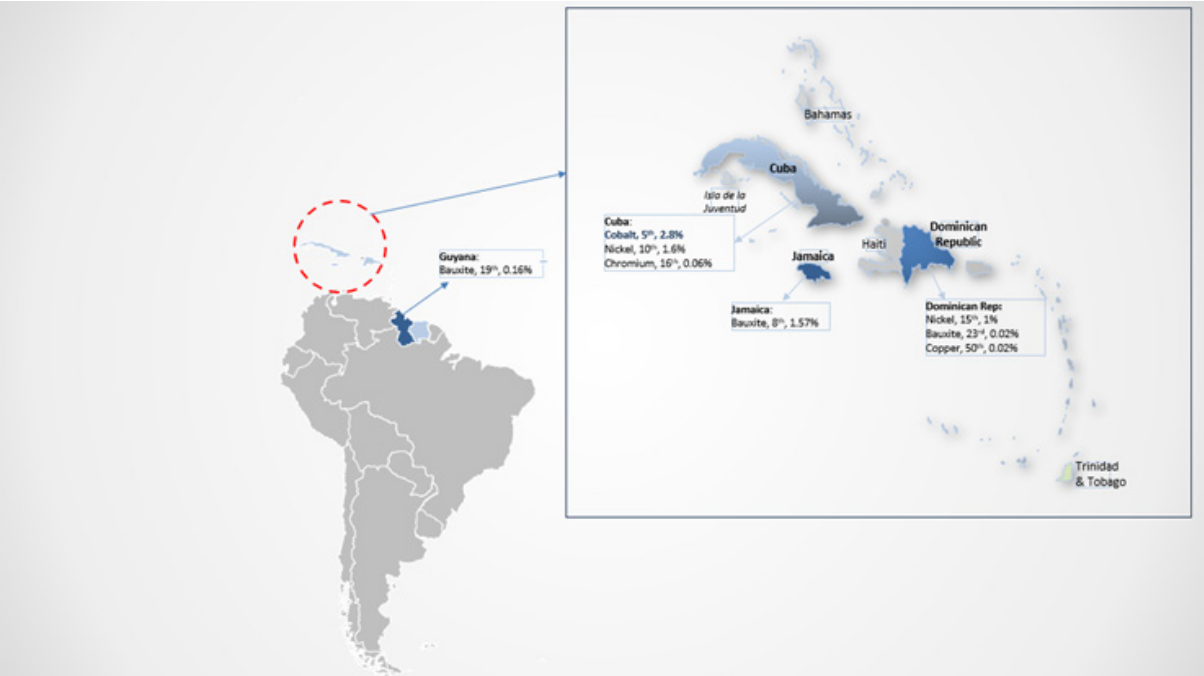
FIGURE 5. Production of selected CRM in Africa: Global rank and share of global production, 2021



Source: World Mining Data, 2023.

The Democratic Republic of the Congo (DRC), for instance, is the largest global producer of cobalt, a key battery metal, with a share of close to 70% of the total world production. South Africa ranks first in four CRMs: chromium (needed in wind turbines), manganese (essential for steel production and advanced batteries), platinum (key for internal combustion engines and fuel cells), and rhodium. It also ranks second in palladium production and third in titanium production. Zimbabwe has significantly increased its mineral production in the last few years, now ranking third worldwide in platinum and rhodium production and fifth in chromium and palladium production. Guinea alone accounted for 23% of global bauxite production (the primary aluminum ore) in 2021, ranking second globally. With the Simandou project expected to come on stream in the next few years, Guinea is set to become a key iron ore producer in the near future (World Mining Data, 2023).

FIGURE 6. Production of selected CRM in the Caribbean: Global rank and share of global production, 2021



Source: World Mining Data, 2023.

Caribbean countries are also well endowed with minerals and CRMs, although at a smaller scale compared to Africa. The region is rich in chromium, nickel, copper, cobalt, and bauxite. Cuba and the Dominican Republic are the main CRM producers, as shown in Figure 5 and Table 1.

TABLE 1. Total Caribbean share of CRM production in relation to global production, 2021

CRM	Total Caribbean share in global production	Key producers
Chromium	0.06%	Cuba
Cobalt	2.83%	Cuba
Nickel	2.60%	Cuba, Dominican Republic
Bauxite	1.75%	Jamaica, Guyana, Dominican Republic
Copper	2.00%	Dominican Republic

Source: World Mining Data, 2023.

TABLE 2. Production of selected CRMs in the Pacific: Global rank and share of global production, 2021

CRM	Total Caribbean share in global production	Key producers
Chromium	0.30%	Papua New Guinea (PNG)
Copper	2.20%	PNG
Nickel	1.12%	PNG
Cobalt	0.31%	PNG

Source: World Mining Data, 2023.

In the Pacific region, the main producer of land-based CRM is PNG, with important production of copper, nickel, cobalt, and chromium. Fiji has untapped reserves of copper and zinc, although, in recent years, its exploration budget has declined (S&P Global, 2024).

4.2.1 Potential Seabed Resources[7]

Deep-sea ecologies are under-explored. The environmental impacts of seabed mining pose high risks with much uncertainty. The deep sea is known to be the largest habitat for life on the planet; thus, the categories of risk span habitat removal, sediment and plume disturbances, water discharges of contaminants and toxins, and light and noise pollution. Social, economic, health, and cultural disruptions upon inhabitants are notable impacts.

OACPS countries in the Pacific without significant land-based mineral resources have deep-sea resources. These resources are found in their Exclusive Economic Zones (EEZs), generally between 500 m and 6,000 m beneath the ocean surface. There are three categories of deep-sea resources, all containing very high grades of CRMs.

Polymetallic (manganese) nodules (PMNs)

PMNs are found in vast deep-water abyssal plains and are comprised primarily of manganese, iron, silicates, and hydroxides. PMNs of interest contain high-purity manganese (28%), nickel (1.3%), copper (1.1%), cobalt (0.2%), molybdenum (0.059%), and REEs (0.081%) (Thompson et al., 2018).

In the Pacific Islands region, the greatest concentration of metals found in manganese nodule deposits is situated in the EEZ of the Cook Islands. Other islands, such as the Republic of Kiribati (Phoenix and Line Islands and Gilbert Islands), Tuvalu, and Niue, have relatively highly abundant PMNs within their EEZs (Thompson et al., 2018).

In 2022, the Cook Islands issued three exploration licences within its EEZ, taking a precautionary approach during the exploration phase.

[7] It is beyond the scope of this section of the paper to argue for or against seabed mining. The objective is only to highlight where the minerals are and what role countries could potentially play if they decide to exploit their resources.

Polymetallic sulphides (PMSs)

Seafloor PMSs are associated with both active and inactive hydrothermal vents along oceanic ridges. They have high sulphide content but are also rich in copper, gold, zinc, lead, barium, and silver. Deposits in the Pacific are located in comparatively shallow water (<2,000 m) and are found in the EEZs of PNG, Solomon Islands, Vanuatu, Fiji, Marianas Islands, and Tonga (Petterson & Tawake, 2017).

Cobalt-rich ferromanganese crusts (CFCs)

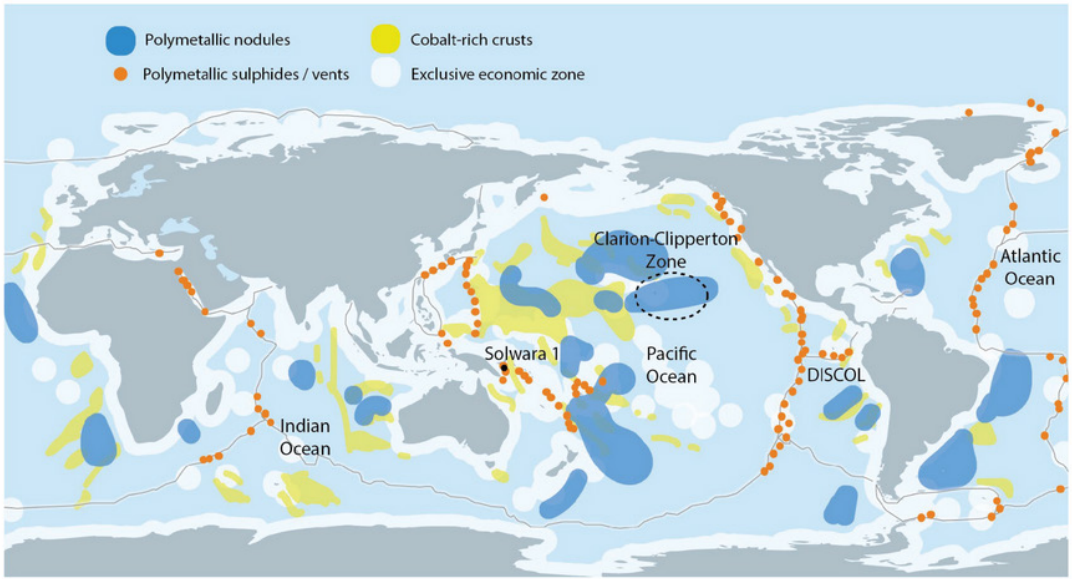
CFCs can be found at shallower depths of <400 m to about >5,000 m in areas of significant volcanic activity (International Seabed Authority [ISA], 2024a). In many cases, the deposits occur within EEZs. The EEZs of the Republic of Kiribati and the Federated States of Micronesia are also considered potential locations to exploit cobalt crusts; smaller reserves have been recorded in Tuvalu, Samoa, and Niue (Thompson et al., 2018).

Similar in general composition to the polymetallic nodules, cobalt-rich crusts are attracting investment in exploration for higher cobalt percentage (up to 2%), platinum (0.0001%), and REEs besides nickel and manganese (Thompson et al., 2018).

4.2.2 CRMs in International Waters

Besides CRM seabed resources found in OACPS EEZs, significant mineral potential is also found in international waters (in the international seabed commonly called "the Area"), which fall beyond any country's national jurisdiction but are managed by the United Nations Convention on the Law of the Sea (UNCLOS) and administered by the ISA. Areas of particular interest are the Clarion-Clipperton Fracture Zone in the north-central Pacific Ocean; the Penrhyn Basin in the south-central Pacific Ocean; the Peru Basin in the southeast Pacific; and the centre of the north Indian Ocean. They all contain significant accumulations of PMNs.

FIGURE 7. Distribution of critical mineral resources in the deep sea



Note: The white area around Antarctica is not an EEZ but rather governed by an international commision.
Source: Ashford et al., 2024, with permission.

To date, the ISA has entered into 15-year contracts for the exploration of the deep seabed with 22 contractors, of which four are from OACPS states. Nineteen of these contracts are for the exploration for PMNs in the Clarion-Clipperton Fracture Zone (17), the Central Indian Ocean Basin (1), and the Western Pacific Ocean (1). Furthermore, there are seven exploration contracts for PMSs in the Southwest Indian Ridge, the Central Indian Ridge, and the Mid-Atlantic Ridge and five exploration contracts for CFCs in the Western Pacific Ocean (ISA, 2023).

It is important to note that there is a system of access for developing countries to the Area and its mineral resources under UNCLOS's "reserved areas" mechanism. The objective of this mechanism is to guarantee access to deep-sea mineral resources for developing countries. When developed states apply to ISA for exploration rights, they are required to contribute to reserved areas. These are kept in a site bank and can only be accessed by developing countries or the Enterprise[8] according to UNCLOS Article 170, Annex IV and 1994 Agreement Annex, Section 2 (ISA, 2020, 2024b).

4.2.3. OACPS and Deep-Sea Mining

Pacific Island countries are united in their desire to preserve their natural resources, but positions differ on whether the seabed can or should be safely accessed and the possible impact on the commercially dominant fishing industry. This divergence of views among Pacific countries is reflected in some calling for a moratorium on deep sea mining for the entire Pacific, while others support commercial exploration and accumulation of scientific knowledge of seabed impacts (McKie, 2023).

4.3 Trade Outlook

A 2023 study by the Organization for Economic Co-operation and Development estimates that in the last two decades, the value of **global trade** in CRMs has increased, outpacing the growth of overall merchandise trade. Between the periods of 2007–2009 and 2017–2019, CRM trade increased by 38% globally, higher than the 31% growth in the trade of all products (Kowalski & Legendre, 2023). The study highlights that this trend has further intensified in the subsequent years, particularly due to the energy transition boom, and catalyzed by post-COVID-19 stimulus packages to develop energy transition and digital technologies.

Key CRMs, such as lithium, manganese, graphite, and cobalt, have seen the highest trade growth of all minerals (Kowalsky & Legendre, 2023). This is consistent with the IEA's demand growth projections for similar CRMs, driven by the energy and digital transitions.

[8] The Enterprise refers to an organ of the ISA established by Article 170 and Annex IV of the UNCLOS. It carries out activities in the Area according to Article 153 (2) (a) of the Convention, including the transporting, processing, and marketing of minerals recovered from the Area. See https://www.isa.org.jm/organs/the-enterprise/

4.3.1 Trade in Selected CRMs for OACPS Countries[9]

Trade patterns in CRMs from OACPS countries show a similar trend, despite a fall in 2020 due to disruptions resulting from the COVID-19 pandemic. Figures 8 to 11 show the increasing trend between 2019 and 2021 for copper, cobalt, PGMs, and graphite. The pace of growth of CRMs has accelerated remarkably in the last few years, showing the growing importance of OACPS countries as sources of CRMs (see **Annex E** for Harmonized System [HS] codes used for this section).

FIGURE 8. All OACPS copper exports

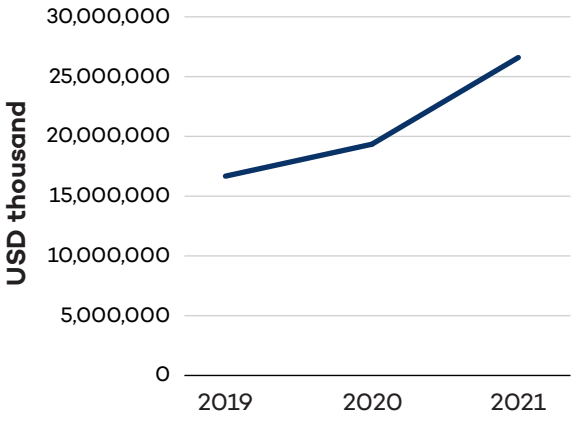


FIGURE 9. All OACPS cobalt exports

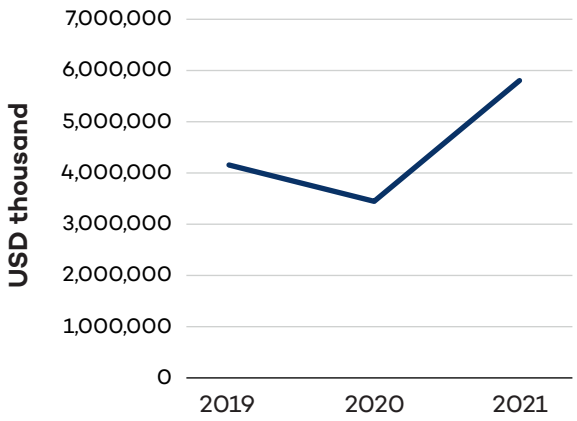


FIGURE 10. All OACPS PGM exports

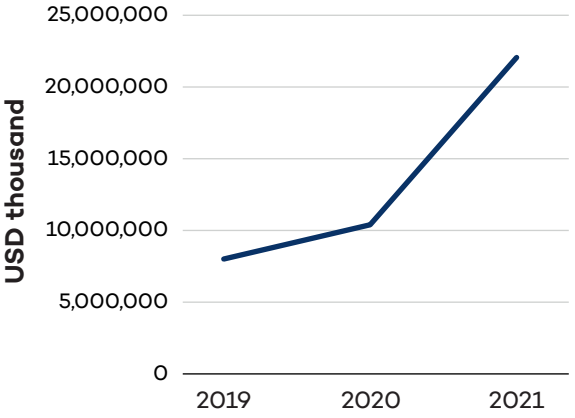
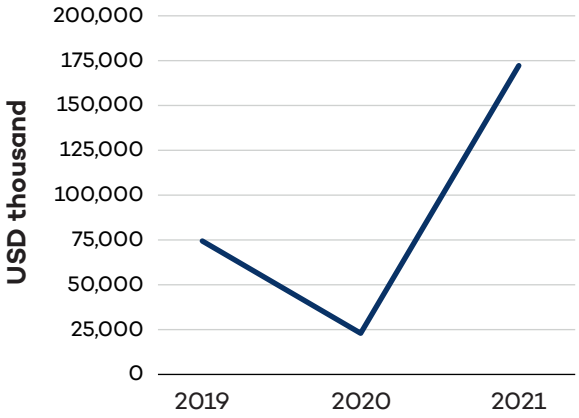


FIGURE 11. All OACPS graphite exports



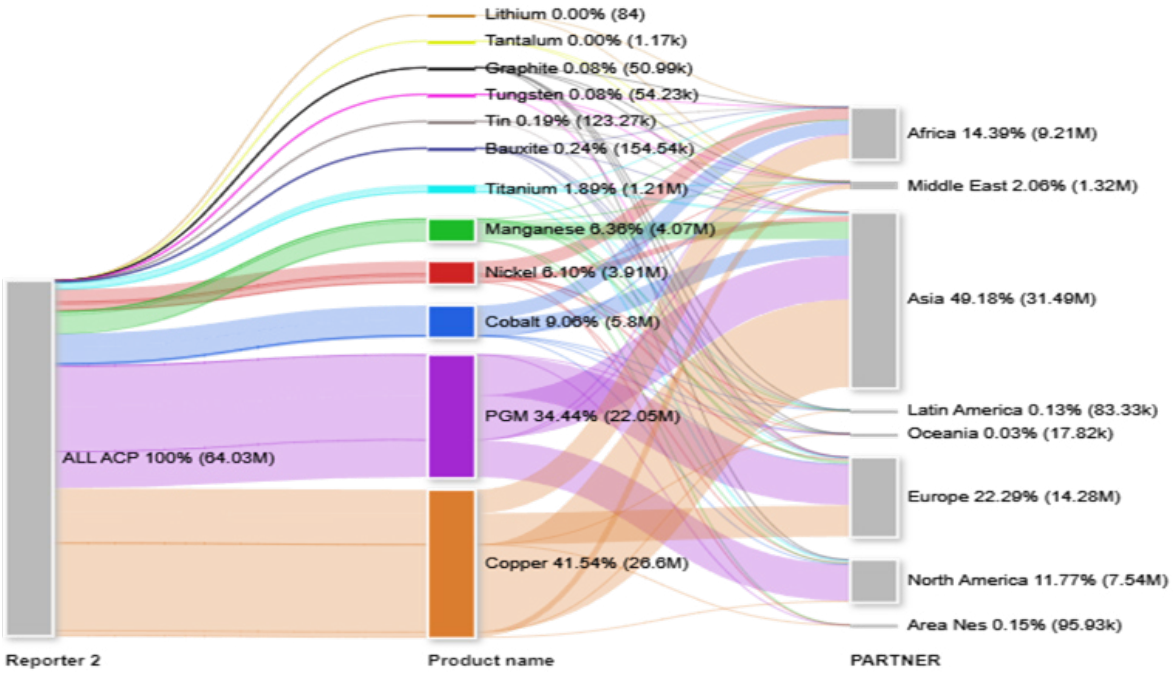
Source: ITC, 2024.

As Figure 12 shows, in 2021, African countries were by far the largest OACPS suppliers of CRMs. In 2021, **copper** (at all stages of beneficiation combined) accounted for 41.5% of all OACPS CRM exports by value, making it the most traded CRM from OACPS mineral producers. Key producers in Africa were Zambia and the DRC. In the Caribbean region, the main copper producer was Dominican Republic, while in the Pacific, PNG was the main exporter. PGMs were

[9] Please note that the data in this section is for 2021, and all values are expressed in USD thousand. The report includes only the OACPS members that have reported information to the International Trade Centre (ITC) or COMTRADE.

the second-largest OACPS CRM export by value (as a share of total CRM exports) in 2021, accounting for 34.4% of all CRM exports from OACPS countries. The two main PGM exporters were South Africa and Zimbabwe, leading the African and global markets.

FIGURE 12. All OACPS CRM exports by commodities and regions of destination, 2021



Source: ITC, 2024.

Cobalt, a co-product of copper in the DRC and Zambia and a co-product of nickel in Madagascar, was the third main CRM exported by OACPS countries in 2021. DRC was by far the largest exporter, both in Africa and globally.

In 2021, the major regional market for OACPS CRM exports was Asia,[10] with a share of 49.2% of all OACPS CRM exports, as shown in Figure 12. Europe[11] accounted for 22.3% of total OACPS exports. African countries were the third major market for CRM exports from OACPS countries, with a share of 14.4% of total OACPS CRM exports. These were mainly intra-Africa exports of raw materials for further processing, destined for regional smelters and refiners.

4.3.2 A Snapshot of Beneficiation Capacities in Africa

This section provides a brief overview of known data on existing ore processing and refinery capacities in African countries for CRMs. Data regarding existing beneficiation facilities for CRMs is, at best, limited. While some data exist on the number of facilities in a few countries, there is a gap in the knowledge regarding the processing capacity of those facilities, which does not allow us to analyze the extent to which existing facilities are sufficient (or not) to add value to raw materials.

[10] In Figure 12, "Asia" includes Russia.

[11] In Figure 12, "Europe" includes the United Kingdom, Switzerland, and Georgia.

Data used for this section is based on pan-African inventory research conducted by the EU-funded project Africa MaVal, published in September 2023 (de Oliviera et al., 2023). The database maps four types of processing facilities across African countries and is considered an extended list of CRMs[12] essential for EU industries. Types of facilities recorded include

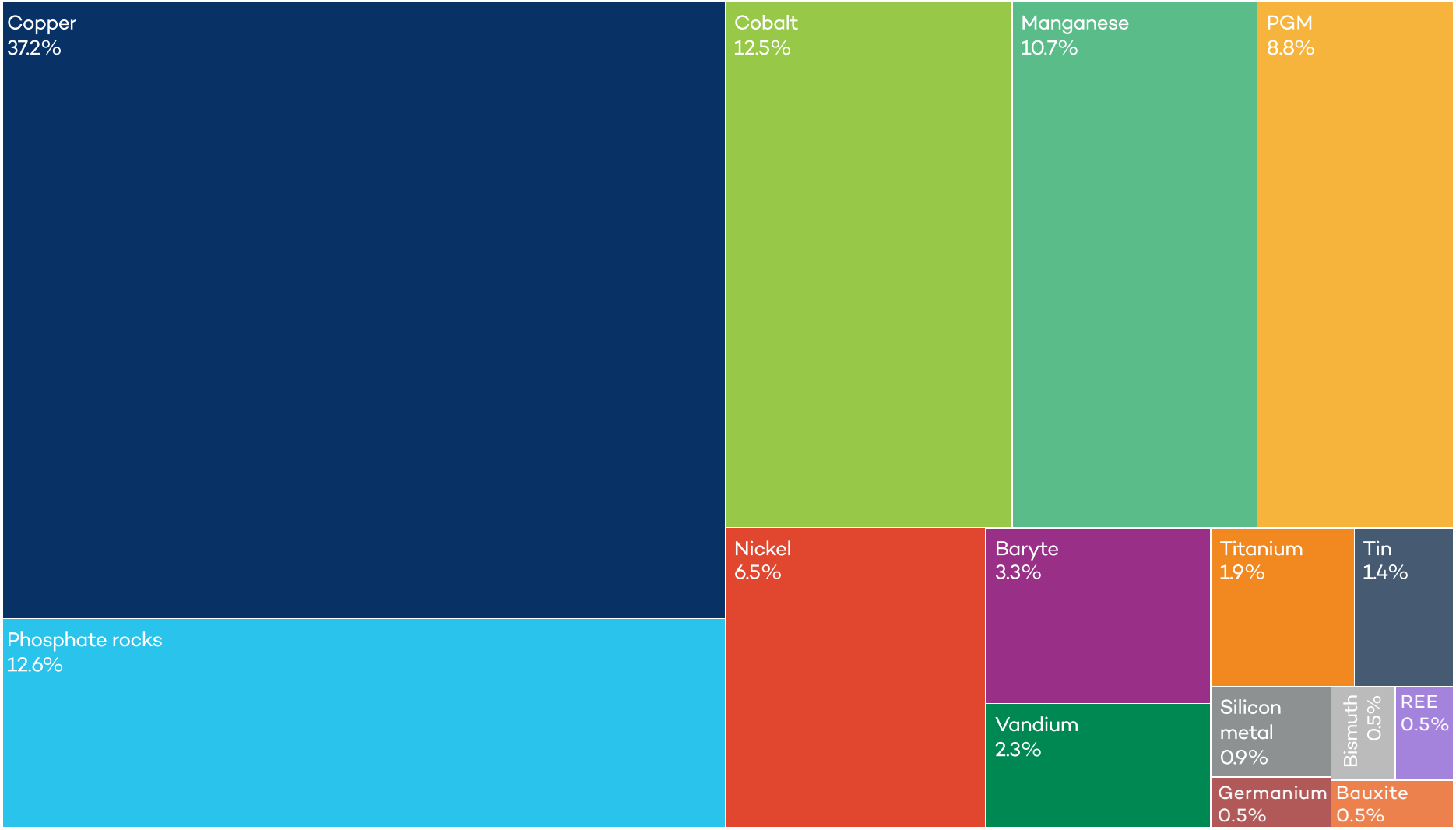
- processing plants (i.e., general industrial facilities for communition where extracted raw ores are crushed, screened, grinded, and classified);
- concentrators (i.e., facilities where valuable minerals within raw ore are extracted);
- smelters, where metals are extracted from ores; and
- refineries, where the grade or purity of the metals is enhanced.

They recorded 215 facilities across the four types of processing facilities. It is estimated that roughly half of the facilities are meant for communition, which is the first stage in the beneficiation process (see an indicative illustration of the copper beneficiation value chain in **Annex F**). These are basic activities that separate commercially valuable minerals from their ores through different types of metallurgical processes. The database estimates that smelting and refining each make up about 20% of processing facilities for CRMs in Africa.

As illustrated in Figure 13, the report found that about 37% of the facilities were tasked with beneficiating copper, which is the main CRM produced in and exported from Africa (de Oliviera et al., 2023), as shown in the next section. These plants are found in several countries across the continent, including countries that are not big copper-producing or exporting countries. Besides the DRC, South Africa, Zambia, and Zimbabwe, which have significant copper production, countries such as Botswana, Namibia, Niger, and Tanzania have processing facilities, as shown in Figure 14.

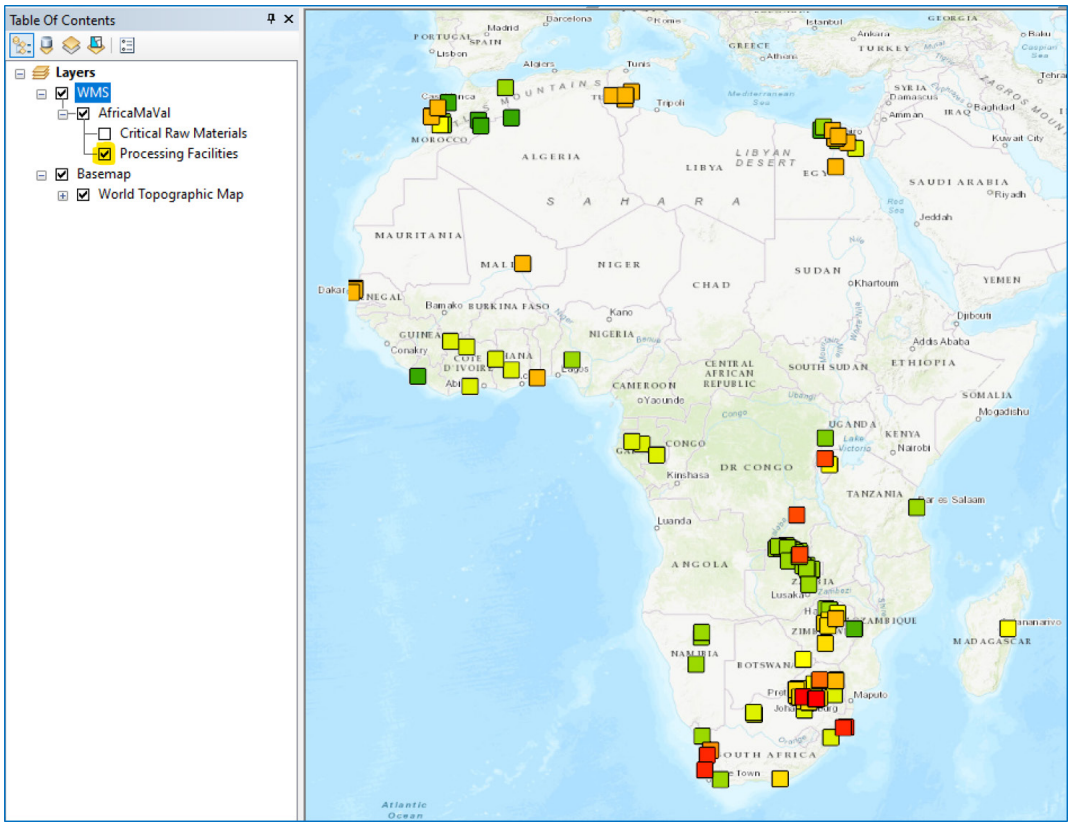
[12] This list of extended critical raw materials (ECRMs) included in the study are: antimony (Sb), baryte, bauxite, beryllium (Be), bismuth (Bi), borate, cobalt (Co), copper (Cu), fluorspar, gallium (Ga), germanium (Ge), hafnium (Hf), indium (In), lithium (Li), magnesium (Mg), manganese (Mn), natural graphite, nickel (Ni), niobium (Nb), coking coal, phosphate rock, phosphorus (P), silicon metal (Si), scandium (Sc), strontium (Sr), tantalum (Ta), tin (Sn), titanium (Ti), tungsten (W), vanadium (V), REEs, and PGMs.

FIGURE 13. Facilities by commodities (% share)



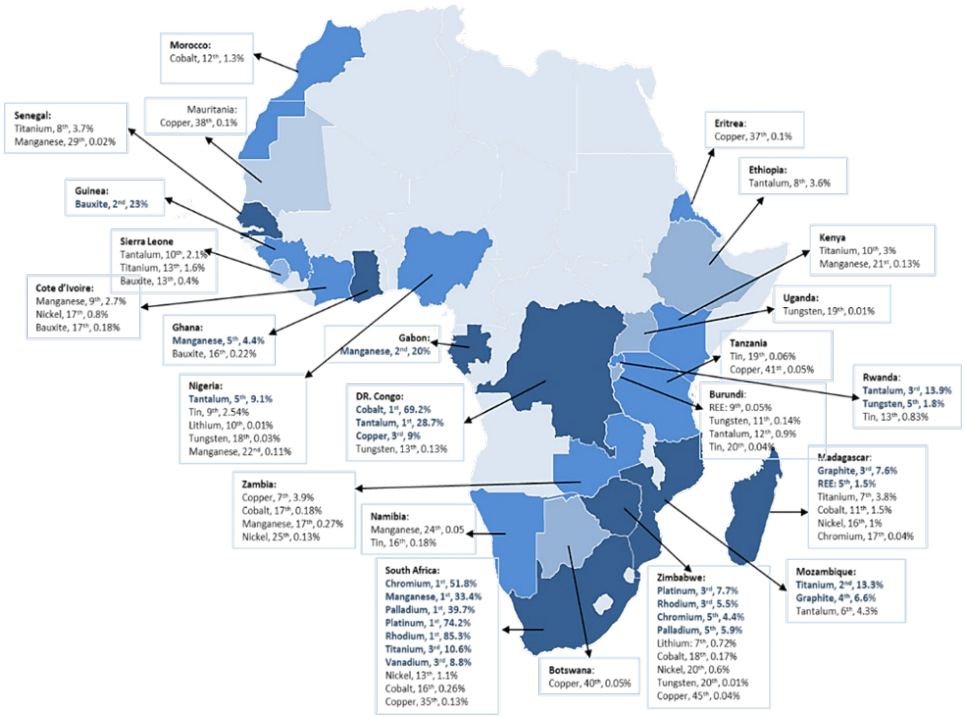
Source: de Oliviera et al., 2023.

FIGURE 14. Geographical distribution of processing facilities across Africa



Source: de Oliviera et al., 2023.

FIGURE 15. Key critical mineral-producing countries by global share and rank



Source: Author, based on ITC, 2024.

A glance at Figures 14 and 15 clearly shows the stark contrast between the limited scale of existing beneficiation facilities and the raw material production capacity in Africa, respectively. Existing processing facilities are largely insufficient, given the current levels of CRM production in Africa and the pace at which demand for CRMs is expected to grow in the coming years. It is therefore important to increase the capacity of existing facilities and invest in new facilities, in particular, smelters and refineries, where a substantial part of the mineral value is enhanced.

4.3.3 An Illustrative Example of CRM Exports by Level of Beneficiation: Copper

To better understand trade patterns in CRMs, one needs to take a granular look at each CRM by stage of beneficiation and for each exporting country. While a higher-level assessment (at the two-digit level) provides insights into the basic trends, it is not sufficient to understand what levels of processed CRMs countries are exporting—elements that are a good proxy for value addition—as they fetch a higher export value, given their higher prices.

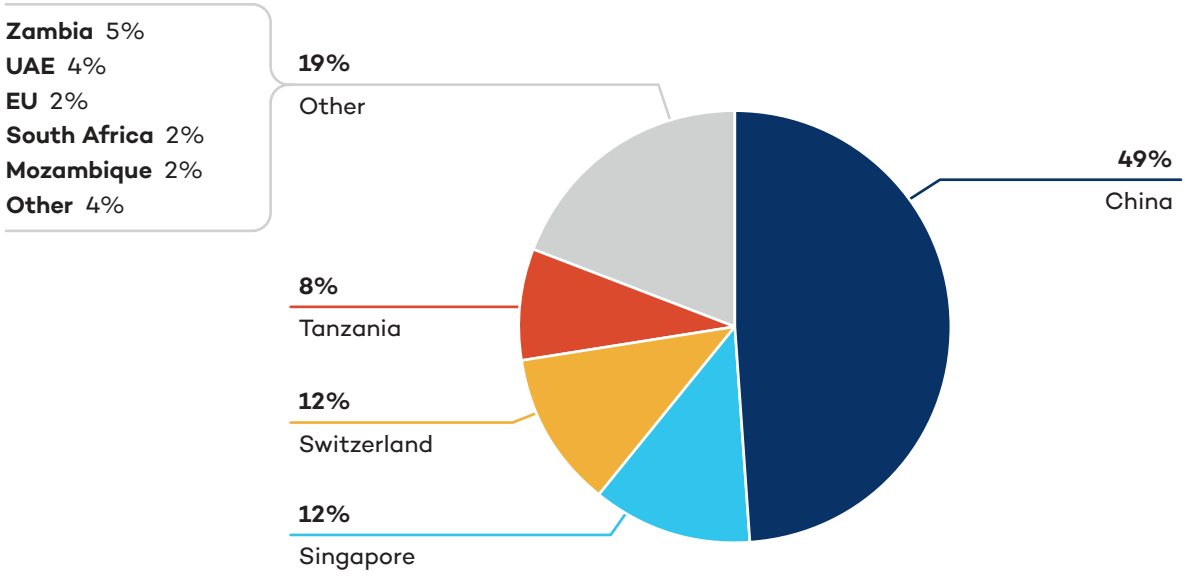
For the sake of illustration, this section looks at copper and provides some data on exports by level of beneficiation (explained in more detail in **Annex F**) for the two main OACPS exporting countries, namely Zambia and the DRC.

Overview of all OACPS copper exports by country of destination, 2021

As seen in Figure 11, in 2021, about half of overall OACPS copper exports are destined for China, while Singapore and Switzerland each receive 12%. African countries altogether account for about 17% of the market for all OACPS copper exports. These mainly represent intra-Africa exports destined for smelters and refiners in neighbouring countries.

Figures 16 to 19 provide further details about copper exports from OACPS countries by level of beneficiation (i.e., for primary and processed products) and by country of destination. These include (i) copper ores and concentrates (HS 2603), ii) copper mattes (HS 7401), (iii) unrefined copper (HS 7402), and (iv) refined copper (HS 7403).

FIGURE 16. All OACPS copper exports by destination, 2021

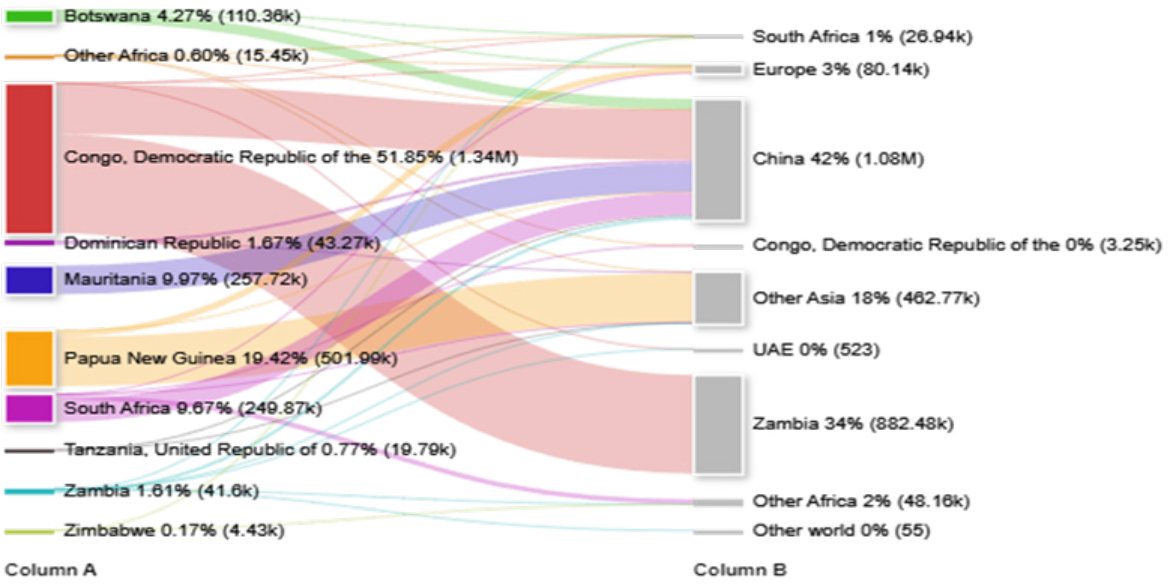


Source: ITC, 2024.

Copper, ores and concentrates (HS 2603)

In 2021, the DRC was the main OACPS exporter of copper ores and concentrates, with 51.85%.

FIGURE 17. Copper ores and concentrates exports by country, by % of OACPS CRM exports, and in value (USD thousands), 2021



Source: ITC, 2024.

It was followed, interestingly, by PNG, which accounted for 19.42% of all OACPS copper ores and concentrates exports in 2021. Mauritania was the third-largest OACPS exporter of copper ores and concentrates, exporting exclusively to China in 2021. With a very small production of copper, the Dominican Republic exported 69% of its copper ores and concentrates to China and 31% to Malaysia. While these three countries are relatively small exporters, they almost exclusively export their copper in ore and concentrate form without further processing, and mainly to Asian markets. Interestingly, Zambia, which is Africa's largest copper producer, only ranks seventh out of the 10 OACPS exports, which signals that Zambia does not export copper ores and concentrates but rather a more transformed form of copper (see below).

FIGURE 18. PNG copper exports, ores and concentrates, 2021

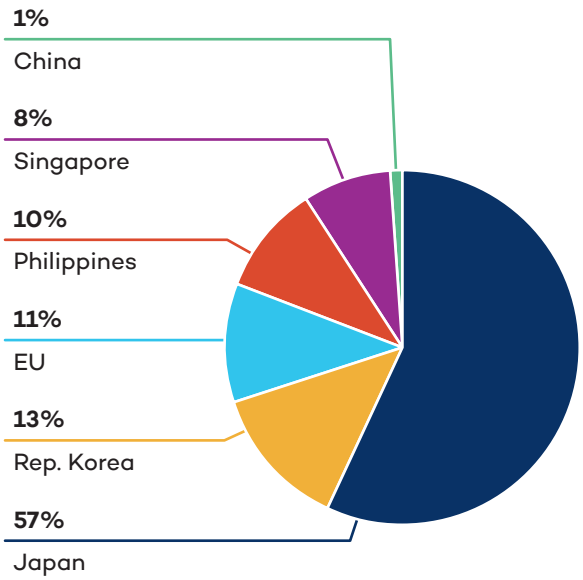
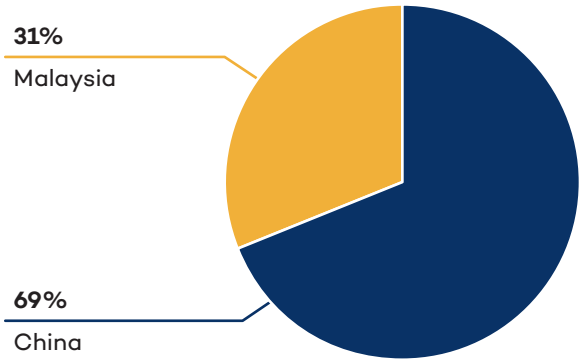


FIGURE 19. Dominican Republic copper exports, ores and concentrates, 2021

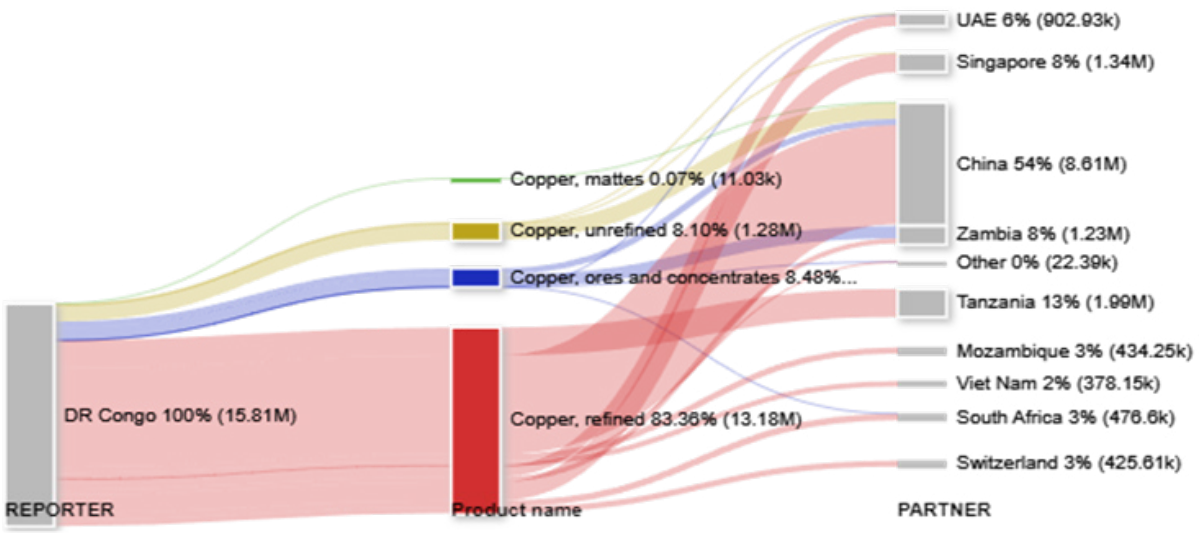


Source: ITC, 2024.

In 2021, **China** was the largest market for copper ores and concentrates, essentially sourcing from the DRC, Mauritania (its only export market), Botswana, and South Africa. **Zambia** was the second-largest market for copper ores and concentrates coming mainly from the DRC.

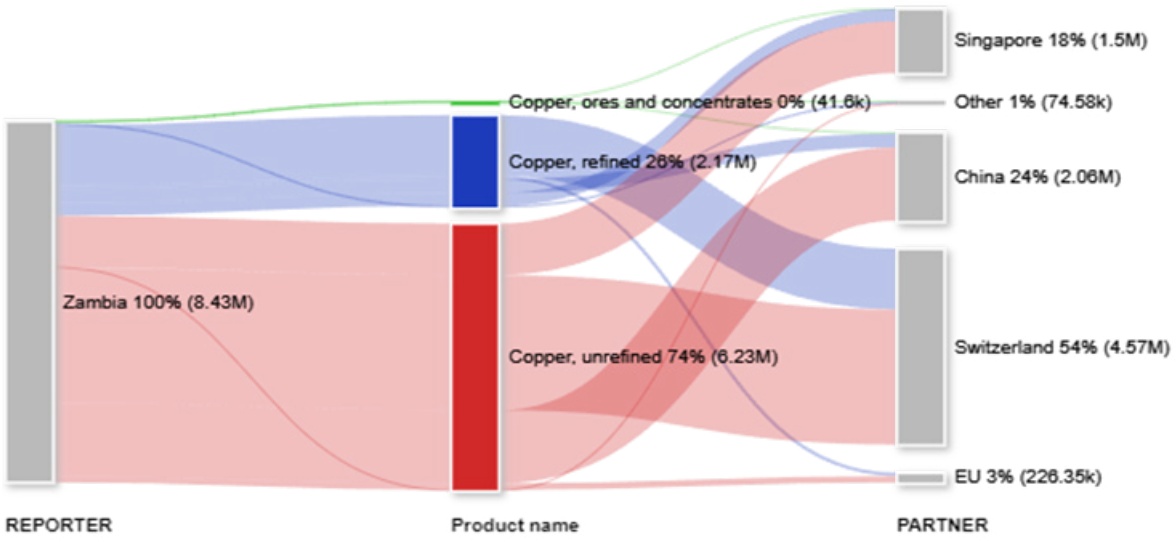
It is interesting to have a deeper look at the trade figures for copper by the level of beneficiation for the two largest African producers, namely the DRC and Zambia. Data from Figures 20 to 27 highlight some interesting trends that reveal the types of copper exports and the direction of trade for the two countries.

FIGURE 20. Overview of DRC's copper exports by market, 2021



Source: ITC, 2024.

FIGURE 21. Overview of Zambia's copper exports by market, 2021



Source: ITC, 2024.

Starting with the **DRC**, Figure 20 provides a breakdown of CRM exports by stage of beneficiation in 2021. It shows that copper ores and concentrates (i.e., unprocessed copper) only accounted for 6.25% of total copper exports, while refined copper (the highest level of beneficiation before the stage of industrial fabrication) accounted for the bulk of the country's total copper exports with a total share 83.42% of copper exports.

Figure 21 shows a contrasted picture of **Zambia**. While the country does not export copper ores and concentrates in significant amounts and does not report on exports of copper mattes, in 2021, unrefined copper exports accounted for 74% of the country's total copper exports, which contrasts starkly with the DRC (8.1% of total copper exports). Refined copper accounted for the remaining 26% of Zambia's total copper exports in 2021, again in contrast with the DRC. Market destinations vary by level of beneficiation for DRC and Zambia's exports, as illustrated by Figures 22–27.

FIGURE 22. DRC copper exports, ores and concentrates, 2021

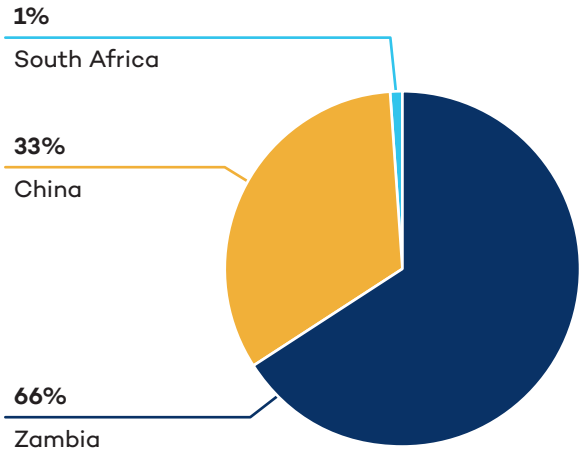
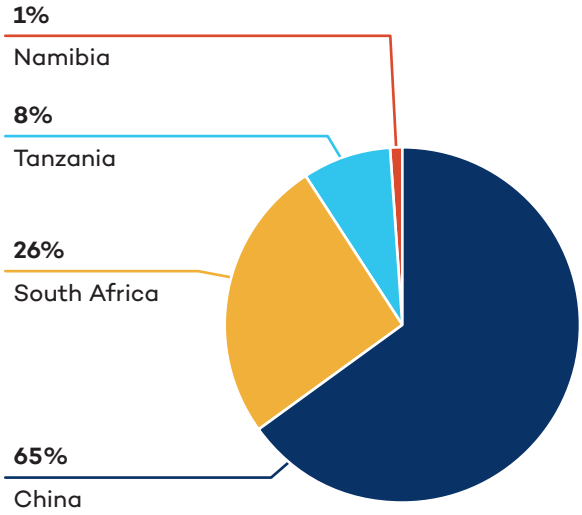


FIGURE 23. Zambia copper exports, ores and concentrates, 2021



Source: ITC, 2024.

From Figure 22, two thirds of DRC's copper ores and concentrates are destined for further transformation in Zambia's smelters, while the other third goes to China. The totality of copper mattes—which represent only 0.07% of the DRC's copper production—is exported to China. Although negligible (less than 1%), 65% of Zambia's copper ores and concentrates are exported to China, with South Africa representing 26% of Zambia's export markets (Figure 23).

Exports of unrefined copper (HS 7402), 2021

FIGURE 24. DRC copper exports, unrefined, 2021

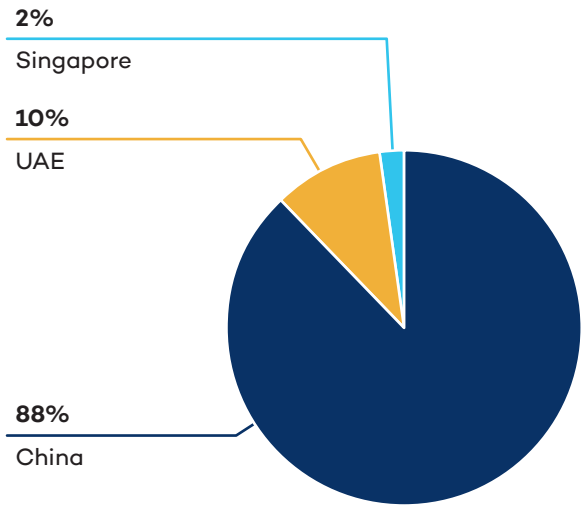
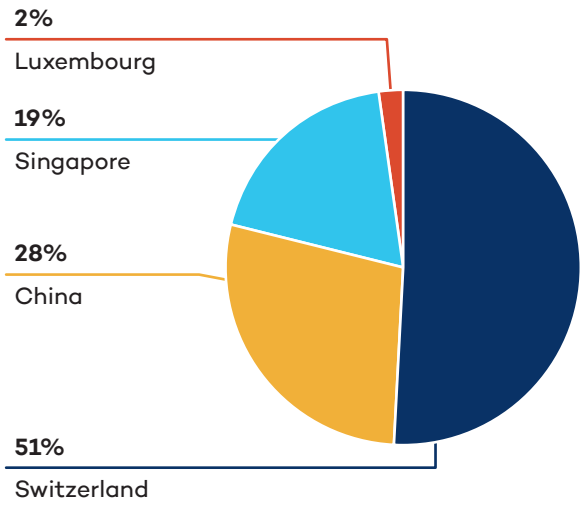


FIGURE 25. Zambia copper exports, unrefined, 2021



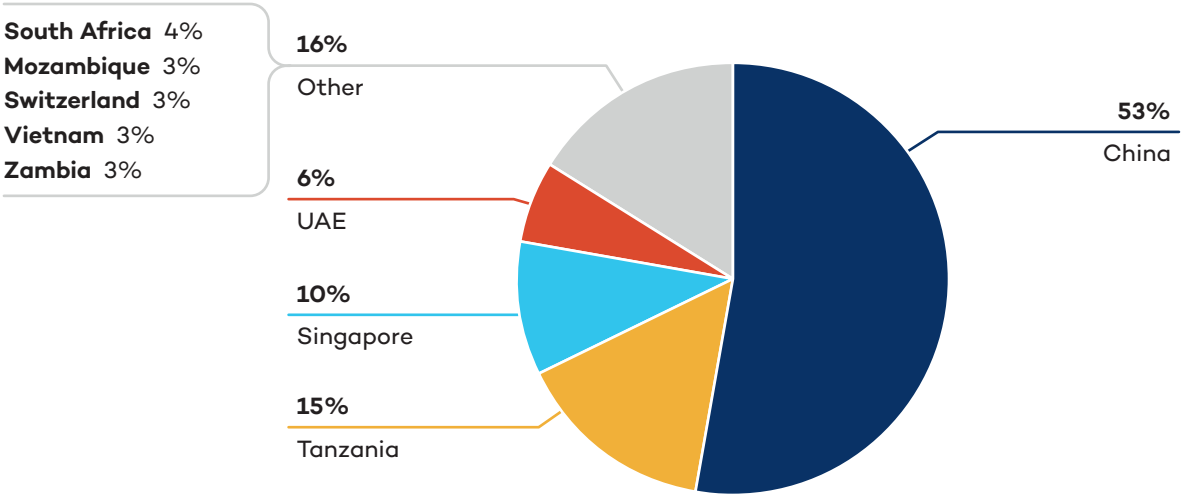
Source: ITC, 2024.

From Figures 24 and 25, unrefined copper production accounted for 8.1% of DRC's copper production and 74% of total copper exports, respectively, in 2021. However, Figure 24 shows the direction of exports, with 88% of the DRC's unrefined copper routed to China, while only

28% of Zambia's unrefined copper was destined to China for further processing. Slightly over half of Zambia's unrefined copper was reported to have been exported to Switzerland. While Switzerland does not have physical refining capacity, Figure 25 shows that half of Zambia's unrefined copper is bought and sold by commodity trading companies such as Glencore, which is also a major key copper producer in the country.

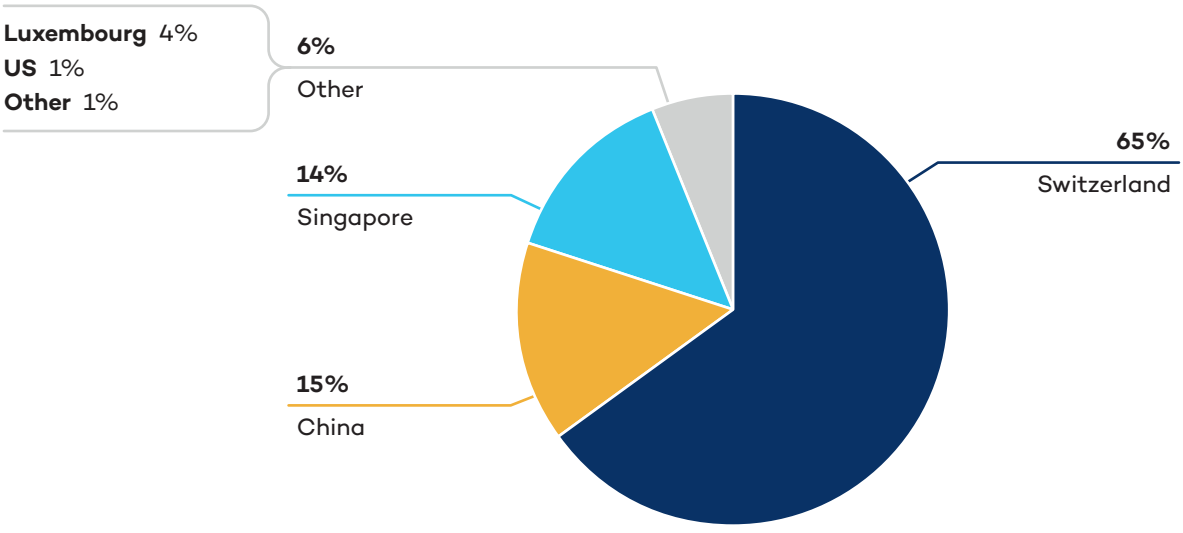
Exports of refined copper (HS 7403), 2021

FIGURE 26. DRC copper exports, refined, 2021



Source: ITC, 2024.

FIGURE 27. Zambia copper exports, refined, 2021



Source: ITC, 2024.

As mentioned, in 2021 the bulk of the DRC's copper (83.36%) was exported in refined form, as shown in Figure 26, of which 53% is exported to China. Zambia offers a contrasting picture, with only 26% of its copper exports in refined form. Sixty-five percent is destined for

Switzerland, essentially sold through the latter's commodity trading hub. African countries account for the second-largest market for the DRC's refined copper (25% in total), with 15% going to Tanzania, 4% to South Africa, 3% to Zambia, and 3% to Mozambique. Less than 1% of Zambia's refined copper exports go to other African countries. China accounts for 15% of Zambian exports of refined copper.

5.0 Regulatory Frameworks Governing CRMs

Mineral resources are sub-soil assets, and in most resource-rich countries, they are the property of the state, which manages the assets on behalf of the people. This particularity makes the regulation of the mineral sector more complex than any other economic sector.

A sound legal and regulatory framework is a precondition for mining investments and activities to take place in a predictable manner. Legal and regulatory mining frameworks generally cover issues such as licensing or permitting regimes, as well as the rights and obligations of licence holders and of the state with respect to environmental protection and the health and safety of workers (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development [IGF], 2023).

The mining sector operates within a broader landscape where other policies—such as fiscal, industrial, competition, and trade and investment—have direct bearings on the sector. It is therefore important to ensure appropriate coordination, consistency, and coherence across policies, both at the national and international levels.

Legal and regulatory frameworks can enhance or undermine the competitiveness of the mining sector. On the one hand, stringent rules and frequent changes and/or policy reversals may increase the level of investment and political uncertainty and risks for countries. These countries may be perceived as unstable investors' destinations. Alternatively, too generic and generous rules with unclear guidelines may cause a race to the bottom with few benefits for the state and mining communities. This could lead to a risk of future frequent policy changes due to unrest caused by a perception that the mining industry is making insufficient contributions to local development. These frequent changes will, in turn, increase the perception of policy uncertainties and political risks (IGF, 2023).

5.1 Brief Overview of Relevant Policies and Frameworks Governing CRM in OACPS Countries

The mining sector is regulated by a complex web of national and international policies and legal instruments that govern various phases of mining activities, from exploration to closure

and post-mining transition. At the national level, mining activities are regulated by mining policy statements, legal and regulatory instruments (such as mining codes, statutes, decrees), and mining contracts (i.e., agreements between the state and mining companies for specific projects). Mining companies sometimes have specific agreements with local communities (Korinek & Ramdoo, 2017).

To stimulate a move away from raw materials export dependencies, many OACPS CRM-producing countries have implemented performance requirements, such as local content policies or beneficiation requirements, on mining companies. These policies are meant to retain raw materials at the domestic level to stimulate local value addition through upstream procurement and/or downstream beneficiation.

Other countries have chosen to optimize revenues through their fiscal regimes (Ramdoo, 2016). These types of payment regimes (such as taxes and royalties) and incentives are important cost elements that can impact mining projects—and therefore, the supply of CRMs. These are particularly important when CRMs are subject to price volatility.

5.1.1 Classifying Minerals as "Green" or "Strategic Substances"

A recent survey conducted by the IGF revealed that about 60% of CRM-producing developing countries[13] have or intend to have a CRM strategy, and about 80% of respondents indicated that they have or intend to have a list of CRMs. The three main drivers of designing and implementing CRM strategies were (i) beneficiation for 27% of respondents, (ii) higher revenues for 26% of respondents, and (iii) strategic positioning for 21% of respondents. What clearly came out of the survey was that CRM was considered a strategic issue for producing countries.

There is no consensus on the terminology to designate minerals "green" or "strategic substances," and approaches differ widely across countries. In Africa, some countries have "green mineral" policies that include a list of minerals they consider strategic, either because of the rising global demand or because countries consider these minerals to be strategic for their industrial development plans, which are linked to green technologies. This is the case for Ghana—and, to some extent, South Africa. In some other countries, the policy and the list of green or strategic minerals are related to local value addition.

Many countries have imposed a ban on exports of raw materials to stimulate beneficiation. This is the case in the DRC, Namibia, and Zimbabwe, and, to some extent, Nigeria. Other countries, such as Senegal and Madagascar, are likely to follow suit. Table 3 provides some examples of OACPS countries that have identified CRMs as strategic assets to stimulate green growth and foster local value addition.

[13] Countries surveyed covered 80% of IGF member countries, from Africa, Latin America, and Asia.

TABLE 3. Countries that have identified minerals as strategic assets/substances

Country	Minerals	Relevant legislation	Specific requirements
DRC	• Cobalt • Germanium • Columbite-tantalite	Point 48 quatre of Article 1 of Law No. 18/001 of 9 March 2018[14] amending and supplementing Law No. 007/2002 of 11 July 2002.[15]	Conditions of access, research, exploitation, and marketing are fixed by a special regulation. The Prime Minister has the discretionary power to declare certain metals to be strategic substances by decree.
	• Artisanally mined co-balt	Decree No. 19/15 of 5 November 2019[16] on measures to safeguard activities relating to strategic mineral substances for artisanal mining (La Rédaction, 2020).	The state-owned Entreprise Générale du Cobalt has exclusive oversight on artisanal cobalt min-ing.
Gabon	• Uranium • Thorium	Article 140 of the 2019 mining code[17] includes two definitions of strategic substances, notably by nature or by context.	The state can also stock strategic substances for security purposes. Discretionary power to regulate by decree.
Ghana	A wide range of minerals that fall under the umbrella of green minerals, including bauxite, cobalt, copper, lithium, granite, manganese, and nickel.	In July 2023, Cabinet approved the Green Minerals Policy. The Green Minerals Policy will amend the Mining and Minerals Policy of 2014 to include robust and progressive regimes that would enable the country to reap optimum benefits from lithium and other green minerals (Ministry of Lands and Natural Resources, 2023).	The policy bans exports of raw lithium.

[14] https://www.leganet.cd/Legislation/Droit%20economique/Code%20Minier/Loi.18.001.09.03.2018.html

[15] http://congomines.org/system/attachments/assets/000/001/533/original/Strategic_Substances_Decree.pdf?1543917928

[16] https://www.leganet.cd/Legislation/Droit%20economique/Code%20Minier/decret.19.15..PDF

[17] See Loi N°037/2018 Du 11 Juin 2019 Portant Reglementation Du Secteur Minier En Republique Gabonaise - https://www.a-mla.org/en/country/law/1474#

Country	Minerals	Relevant legislation	Specific requirements
Nigeria	Seven strategic minerals identified: gold, limestone, barite, lead/zinc, iron ore, bitumen, and coal	Identified by the federal government (Ministry of Mines and Steel Development, n.d.).	The objective is to foster industrial development. Key measures include incentives to attract investments in those minerals.
South Africa	i. Minerals of the future/green economy • Cobalt • Nickel • Copper • Zinc • Lead • Rare-earth minerals ii. Steelmaking • Manganese • Iron ore iii. Energy Minerals • Coal • Uranium iv. Competitive advantage and hydrogen economy • PGMs • Chrome v. Battery minerals • Vanadium • Lithium	The Targeted Critical Minerals and Metals list was provided in 2022 in South Africa's Exploration Strategy for the Mining Industry (Department of Mineral Resources and Energy, 2022).	The list includes minerals and metals that are deemed "essential" for responding to shift towards the green economy, low-carbon energy, and digitization, among others. The list is comprised of minerals for current or future needs.
Namibia	• Lithium ore • Cobalt • Manganese • Graphite • Rare-earth minerals	In June 2023, the government banned exports of unprocessed CRMs (Reuters, 2023).	Recognizing the strategic value of these minerals, Namibia seeks to encourage local processing and value addition by restricting their export.

Country	Minerals	Relevant legislation	Specific requirements
Zimbabwe	• Lithium ores • Nickel ores • Manganese ores	Zimbabwe introduced a Base Minerals Export Control (Unbeneficiated Base Mineral Ores) Order in 2023 (Statutory Instrument 57 of 2023[18]).	Critical minerals such as lithium, nickel, and manganese ore exports are limited to limit exports from ASM and encourage investments in state-owned mines.

Source: Author's compilation.

5.1.2 OACPS Regional Outlook

5.1.2.1 Africa: Regional and continental frameworks

Besides national policies, OACPS countries have regional and international obligations. In Africa, in 2009, heads of state endorsed the Africa Mining Vision (AMV), a pan-African framework that sets the pathway to scale up the contribution of the extractive sector to Africa's sustainable development.[19] It is meant to foster "transparent, optimal and equitable exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development" (African Union, 2009). Several countries have, since then, domesticated the AMV in their domestic policies.

African CRM producers are members of several, and sometimes overlapping, **Regional Economic Communities** (RECs). In line with the AMV's recommendations, RECs are committed to harmonizing their policies and regulatory frameworks, including establishing monitoring mechanisms, administrative systems, and single points of contact for licensing and regulatory approvals. Many RECs have mining policies, mainly aimed at harmonizing policies among member countries to increase governance and transparency.

The level of intra-Africa trade is relatively low compared to intra-regional trade in other regions of the world.[20] As part of its continental integration agenda, the African Union Commission launched the **African Continental Free Trade Area** (AfCFTA), which came into effect on January 1, 2021. The AfCFTA is set to create the largest free trade area in the world, covering 55 African Union member countries. The agreement provides the framework to

[18] See: https://veritaszim.net/sites/veritas_d/files/SI%202023-057%20Base%20Minerals%20Export%20Control%20%28Unbeneficiated%20Base%20Mineral%20Ores%29%20%28Amendment%29%20Order%2C%202023%20%28No.%201%29.pdf

[19] Several regional initiatives have influenced the formulation of the AMV in 2009. Some examples include the Johannesburg Political Declaration and Plan of Implementation of the World Summit on Sustainable Development; the Africa Mining Partnership's Sustainable Development Charter and Mining Policy Framework; the Southern African Development Community's Framework and Implementation Plan for Harmonization of Mining Policies, Standards, Legislative and Regulatory Frameworks; the Union Economique et Monetaire Ouest Africain's (UEMOA's) Common Mining Policy and "Code Minier Communautaire"; the Economic Commission for Africa and African Development Bank's *Summary Report of the 2007 Big Table: Managing Africa's Natural Resources for Growth and Poverty Reduction*; and the work of the International Study Group to Review Africa's Mining Regimes.

[20] According to United Nations Committee for Trade and Development (UNCTAD), intra-African exports accounted for 16.6% of total exports in 2017, compared with 68.1% in Europe, 59.4% in Asia, 55% in America, and 7% in Oceania. The share of exports from Africa to the rest of the world ranged from 80% to 90% in 2000–2017.

accelerate intra-Africa trade flows, create a single market for goods and services across the member countries of the African Union, and improve Africa's participation in global trade.

In 2023, the African Union Commission and the African Development Bank initiated the development of an **African Green Minerals Strategy** (AGMS), which is based on the AMV, to foster green growth on the continent, using the development of its mineral wealth as feedstock. The objective is to develop green industrial value chains across the continent's home-grown energy transition technological solutions to transition to a low-carbon economy. The strategy is expected to be endorsed by heads of state in 2024.

While the AGMS does not have an explicit definition of "criticality" or a set list of CRMs, technologies that will underpin the industrial value chains to foster green growth have been prioritized. They include the development of renewable energy systems and equipment (namely hydropower, solar photovoltaic, onshore wind, hydrogen, and fuel cells and batteries, as well as the assembly of two- and three-wheeled vehicles). As Table 4 shows, the choice of these technologies guides which strategic raw materials will be needed, namely for further processing and for use as feedstock in green technology value chains.

TABLE 4. Key minerals for the AGMS

Minerals	Wind	Solar photovoltaic	CSP	Hydrogen fuel cells	Energy storage	Hydro-power	Electric vehicles
Aluminum	✓	✓	✓		✓	✓	✓
Chromium	✓		✓	✓		✓	
Cobalt					✓		✓
Copper	✓	✓	✓		✓	✓	✓
Graphite					✓		✓
Iron/Steel	✓	✓	✓	✓	✓	✓	✓
Lithium					✓		✓
Manganese	✓				✓		
Nickel	✓	✓	✓	✓	✓	✓	✓
Phosphate					✓		✓
PGMs				✓			
REEs	✓						✓
Vanadium					✓		
Zinc	✓	✓			✓		

Source: African Development Bank, 2022.

5.2 Brief Overview of Policies Guiding CRMs in OACPS Partner Countries

In recent years, there has been a rise in geopolitical tensions over access to CRMs. Similarly, there are increasing fears over supply chain disruptions (which were accentuated during the COVID-19 pandemic) due to increasing export restriction policies in key CRM suppliers (e.g., Indonesia is implementing a ban on unprocessed nickel [East Asia Forum, 2023]; China has announced potential regulation of exports of REEs and graphite [Benson & Denamiel, 2023]). In response, several companies and policy-makers alike have made supply chain resilience an important policy and political goal.

Two trends are particularly noticeable:

- a resurgence of new industrial policies; and
- friendshoring of supply chains, when domestic industrial policies are not feasible.

5.2.1 A Resurgence of New Industrial Policies

Countries are increasingly designing new industrial policies to foster the reshoring of strategic parts of supply chains (Gentili, 2021; Rojas et al., 2022). Recent years have seen a proliferation of state support programs in OACPS **partner** countries to encourage the repatriation of key industrial segments and boost the development of domestic industrial capacities.

BOX 1. SOME EXAMPLES OF RESHORING INDUSTRIAL POLICIES

China has adopted a new strategy called "dual circulation." One of the objectives of the strategy is to make the Chinese domestic manufacturing industry more autonomous and independent by reducing reliance on foreign technology, given the increasing external uncertainty and volatility (Deloitte, 2022).

The **United States** has passed a series of executive orders to boost domestic production capacity in essential sectors. Recent laws, such as the 2021 Infrastructure Investment and Jobs Act, the 2022 Creating Helpful Incentives to Produce Semiconductors Act (CHIPS) and Science Act, and the 2023 Inflation Reduction Act, all aim to provide state support through tax deductions and subsidies to reshore manufacturing capacities and strengthen the resilience of American supply chains.

Following the establishment of the European Battery Alliance in 2017 to support the industry in transitioning away from fossil fuels, the **European Commission (EC)** launched the European Battery Innovation project in 2021. This project was accompanied by a budget of EUR 2.9 billion (USD 3.5 billion) (EC, n.d.). The EU adopted a series of legislative texts, such as the European Green Deal, (updated) 2021 European Industrial Strategy, the 2022 EU Chips Act and the 2023 Critical Raw Materials Act, which contain several instruments aimed at favouring the development of European supply chains.

Different European countries have taken domestic measures to relocate and build domestic industrial capacities. Examples include France's Plan de Relance, which seeks to reshore strategic sectors, such as battery manufacturing capabilities, e-mobility industries and renewable energy technologies, hydrogen, and artificial intelligence sectors (Ministère de l'Europe et des Affaires Etrangères, n.d.). In the same vein, the 2014 UK Reshore Plan aims to provide support services to assess the feasibility, viability, and success of reshoring domestic industrial capabilities. The plan should also help identify and implement the reshoring strategies of United Kingdom companies (Gentili, 2021). The UK also adopted an Advanced Manufacturing Supply Chain Initiative to encourage suppliers to increase the competitiveness of British value chains.

In Asia, South Korea and Japan have taken measures to reshore industrial activities, particularly for semiconductors (Gentili, 2021).

Approaches undertaken by the United States and the EU are very different and deserve a closer look, as they are likely to have direct bearings on CRM diplomacy, including for OACPS countries.

5.2.1.1 The U.S. Industrial Strategy

The United States' new industrial strategy is implemented through three pieces of legislation, which all aim to improve its economic competitiveness, foster innovation, and offer a new impetus for industrial productivity. In 2021, the Bipartisan Infrastructure Law and the CHIPS & Science Act were passed; in 2023, the United States enacted the Inflation Reduction Act (IRA). Together, these three instruments will inject USD 2 trillion of new federal spending over the next 10 years (Eggers et al., 2023).

This IRA, in particular, seeks to support domestic industrial capacity in—and secure reliable supply for—energy transition technologies and industries to establish the United States as a global leader (and counterbalance China). The act is designed to catalyze investment across a range of sectors, such as clean energy technologies, domestic manufacturing capacity, and transport and electric vehicles (EVs), through roughly USD 500 billion in tax credits, mostly by 2032 (Eggers et al., 2023). The IRA will prioritize the procurement of critical supplies domestically or from free trade partners and will fund R&D and the commercialization of leading-edge technologies, such as carbon capture and storage and clean hydrogen. Tax credit bonuses will be conditional on domestic content and are aimed at facilities that meet American manufacturing and sourcing requirements, particularly in the iron and steel sector.

According to S&P Global analysis (2023), the IRA is expected to impact CRMs in two ways. First, on the demand side, tax credits and subsidies are provided to low-carbon but highly mineral-intensive technologies, such as EVs and wind turbines. On the supply side, the IRA seeks to enhance mineral development in the United States, notably by imposing performance requirements from local mineral content from the United States or countries with which it has a free trade agreement (FTA). To qualify for IRA tax credits, 50% of the critical minerals in a vehicle's battery (by value) must meet these requirements in 2024—rising to 80% by 2027. The IRA also seeks to reduce reliance on "foreign entities of concern."

5.2.1.2 China's Industrial Strategy

China is an emerging economy with significant industrial capacity and global influence. Since the country opened up in the late 1970s, it has invested heavily in building a complete and competitive industrial system and has provided sustained financial and political support, in various forms, to build strategic industries. China's industrial strategy not only aims to achieve its development objectives but is also geared toward establishing a competitive edge globally (EC, 2024a; Jigang, 2020).

To build its industrial capabilities, China has consistently used various industrial policies and instruments. Over the years, with changing priorities and as its industrial scale grew, China has adjusted its domestic and foreign policies and financial toolbox to move up from traditional industries to high-tech and digital sectors to reduce the degree of reliance on foreign technology (The State Council, n.d., Section 2.2) and become a global industrial hub (EC, 2024a).

BOX 2. A CURSORY VIEW OF THE EVOLUTION OF CHINA'S INDUSTRIAL POLICIES

China's industrial growth has been impressive over the past 40 years. Its industrialization strategy can be summarized in four stages.[21]

The "opening up" policy initiated by President Mao and the transition period that followed (1978–1991).

The objective was two-fold. The first was to address the structural challenges and imbalances across economic sectors, namely, to strengthen the development of agriculture and industries. China focused on a range of industrial sectors, such as basic industries,[22] light manufacturing, heavy industries, raw materials, and power industries, which included coal, oil and gas, steel, cement, and other raw materials needed to support industrial development. The state played a key role in the design and implementation of industrial development since the country was a managed economy. Key industrial measures included the identification of growth poles, direct state interventions such as public investments, bank credit and state financial support, and targeted fiscal policies.

The establishment of the market economy system (1992–2001).

Once structural reforms were launched, China provided strategic support to re-engineer its economic base and accelerate industrial development, notably by upgrading its economy toward high-tech industries and tertiary sectors. The country invested massively in land, air, and maritime infrastructure, as well as in energy generation capacities. A priority focus was on technological development and innovation. It was decided in 1997 to encourage research in high-tech sectors to accelerate high-tech industrialization.[23] The 1997 Asian financial crisis marked a turning point in China's industrial reform. To improve the competitiveness of domestic industries, the government encouraged mergers and acquisitions and the consolidation of enterprises to create larger and more solid companies to boost their competitiveness in the domestic market and abroad.

[21] For a summary of China's industrial policies, see Jigang, 2020.

[22] Basic industries include agriculture, light industries, energy, transportation, and raw materials.

[23] The decision was taken at the 15th National Congress of the CPC in September 1997. See Jigang, 2020, p. 13.

China's accession to the World Trade Organization (WTO), followed by policies initiated by the 18th National Congress of the Chinese Communist Party (2001–2012).

When China joined the WTO, a series of reforms were launched to open the country up to foreign trade and investment. It marked the integration of China into the global economy and the acceleration of globalization that followed. The Chinese government embraced globalization through new industrialization pathways, with a focus on international trade, global competitiveness, and the strengthening of its innovation capabilities. At the same time, to overcome the global financial crisis of 2008, other reforms were undertaken. Strategic emerging industries—notably in information networks and high-end manufacturing, bio-medicine, and new materials—were identified and actively supported. China had a dual policy of "bringing in"—through inward foreign investment in key strategic sectors to learn and upgrade its capabilities and know-how—and "going out," where it externalized its investments, including through state-owned and state-backed companies. Building competitive supply chain capacities was a key priority, including in the mining sector.

Reforms initiated since the 18th National Congress in 2012 to date.

These reforms aim to strengthen the country's competitive edge in high-tech sectors and further consolidate the country's industrial strength, this time based on the digitalization and informatization of the economy. There was a marked change in orientation to move away from being the manufacturing floor of the world to becoming a technological leader. The race to global industrial leadership has triggered tensions with other industrial nations, and in particular with the United States, which changed its strategy to contain China's growing influence in the world. Industrial policies focused on acquiring key technological competencies in strategic sectors with, for example, the Made in China 2025 Initiative. China placed greater emphasis on its role as an international player, with the deepening of its Belt and Road Initiative with its partner countries. China's transformation also aims to curb its high greenhouse gas (GHG) emissions, with substantial investments in renewable energy technologies and electro-mobility. Today, China is the fastest-growing market for the production and sales of renewable energy and EVs. To achieve its objectives, China exerts strict controls over inward investments[24] and exports of its strategic technologies and raw materials, policies that are serious causes of concern for other countries, given China's production concentration in global supply chains.

Source: Jigang, 2020; EC, 2024a.

In line with its industrialization strategy, China embraced a holistic approach by securing all segments of the supply chains needed for its strategic sectors. The mining sector is instrumental in that regard, given the importance of raw materials to the functionalities of technologies. Although China hosts significant reserves and production capacity for key CRMs such REEs and graphite at the global level, key ingredients needed in digital and renewable energy technologies, as shown in Figure 2 earlier in the report, it does not dominate upstream CRM value chains because raw material production is location specific. However, as Figure 3 shows, it controls significant shares of midstream value chains, which confers

[24] "On June 30, 2019, the Chinese government issued the Special Administrative Measures for Admission of Foreign Investment (Negative List) (2019 Edition) which only stipulated 40 aspects to prohibit foreign investment, greatly reducing the scope of foreign investment in China" (Jigang, 2020, p. 27).

significant advantages to its downstream industries, such as in the manufacturing of battery cell components, EVs, and renewable energy technologies. It is estimated that China produces 70% of cathodes, 85% of anodes, 66% of separators, and 62% of electrolytes; it holds 78% of global EV cell manufacturing capacity (Castillo & Purdy, 2022).

To gain control over midstream and downstream supply chains, China invested heavily in mining activities and joint ventures abroad to secure access to CRMs, notably in the DRC to access cobalt, in Australia to gain access to lithium, and in Indonesia to source nickel.

5.2.1.3 The EU Critical Raw Materials Act

On March 16, 2023, the EC released two landmark documents: (a) the Net Zero Industry Act[25] and (b) a proposal for a Critical Raw Materials Act (CRMA).[26] They are a response to the growing pressure "to a secure, diversified, affordable and sustainable supply of raw materials" for sectors, such as the low-carbon and digital industries, aerospace, and defence. The CRMA Regulation[27] was adopted by the European Parliament and the European Council on April 11, 2024. It identifies a list of 34 CRMs, of which 17 are considered strategic because they face a higher risk of supply issues (**see Appendix B**).

Like the U.S. IRA, the CRMA sets European content requirements to strengthen the EU's capacity to manufacture renewable and digital technologies. It requires that by 2030, EU industries along the strategic raw material supply chain must follow the following parameters:

- at least 10% of EU's annual consumption of CRM is mined in the EU,
- at least 40% of the EU's annual consumption of CRM is processed in the EU,
- at least 25 % of the EU's annual consumption of CRM is sourced from EU recycling, and
- no more than 65% of the EU's annual consumption of each strategic raw material at any relevant stage of processing should come from a single third country.

5.2.1.4 Implications for OACPS Countries

According to S&P Global estimates, the IRA will drive the domestic capacity of clean technologies in the United States, which will further drive U.S. demand for CRMs like lithium, cobalt, nickel, and copper. Compared to before the IRA (i.e., in 2021), U.S. demand in 2035 is estimated to reach 15% higher for lithium, 13% higher for cobalt, 14% higher for nickel, and 12% higher for copper (S&P Global, 2023). Most of these materials will be imported from countries that do not have an FTA with the United States. Nickel is a case in point: currently, 47% of U.S. nickel imports are from non-FTA countries (including 11% from Russia, which may fall within the foreign entities of concern).

Currently, CRMs needed in EU-made technologies are mostly sourced from outside the EU. Notably, China provides 100% of the EU's supply of heavy REEs, and Turkey provides 98% of the EU's supply of boron. The raw material content sourcing is rather modest, which implies that this is not likely to affect many African producing countries to any great extent, except

[25] See: https://single-market-economy.ec.europa.eu/publications/net-zero-industry-act_en

[26] For more information on EU's Critical Raw Materials policies, see https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en

[27] For the full legal text, see https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401252

for **South Africa**, which provides 71% of the EU's platinum needs. The EU will have to diversify away from South Africa to remain within the limits of 65% single sourcing.

Probably the biggest concern for OACPS countries is the required 40% domestic content for processed materials. As mentioned earlier, an increasing number of OACPS countries are putting restrictions on the export of unprocessed CRMs to stimulate beneficiation and increase processing capacities and move up the value chain. If those plans materialize, their processed materials exports may face quantitative restrictions on the EU market, as the EU steps up efforts to develop its own processing capacities. This may put OACPS industrialization strategies at risk, notably by having negative impacts on decisions to invest in beneficiation capacities, harming existing industrial capabilities, and putting jobs and revenues at risk in OACPS countries. Moreover, as the EU subsidizes its own domestic processing capabilities, OACPS countries are likely to face unfair competition.

5.2.2 Friendshoring Policies

When reshoring is not feasible or not possible, and when FTAs take too long to negotiate, countries enter into agreements with like-minded countries to **friendshore** supply chains.

Friendshoring initiatives are intended to create sustainable alternative critical mineral supply chains. Interestingly, these initiatives mark the emergence of a phenomenon of joint industrial policies, where countries seek to coordinate their industrial strategies at the global level and work together to strengthen their supply chains (Allan et al., 2023). However, some of those partnerships are quite exclusionary and focus on partnerships with countries that share similar interests or values.

BOX 3. EXAMPLES OF FRIENDSHORING POLICIES

The U.S.-led Minerals Security Partnership (MSP),[28] the Chip-4 alliance (for semiconductors), and the announced EU Raw Materials Club are examples of friendshoring policies that aim to work with other friendly nations and trusted supply sources to ensure supply chain resilience. Similarly, the United States has excluded "foreign entities of concern" and will only provide tax breaks to companies exporting from countries that have an FTA with the United States under the 2023 IRA. In the same vein, in 2021, India, Japan, and Australia entered into a partnership to strengthen the resilience of Indo-Pacific supply chains through the Supply Chain Resilience Initiative. This initiative provides a framework for the three countries to share best practices on supply chain resilience and to organize investment promotion activities and buyer-seller matching events to encourage the diversification of their supply chains (Rojas et al., 2022).

While the purpose of friendshoring policies is to build alliances among industrialized nations to diversify sources of CRM supplies and strengthen supply chain resilience, they nonetheless have the potential to introduce market distortions that will only benefit developed countries

[28] The MSP is a collaboration between 14 countries and the EU to catalyze public and private investment in responsible critical minerals supply chains globally. MSP partners include Australia, Canada, Estonia, Finland, France, Germany, India, Italy, Japan, Norway, the Republic of Korea, Sweden, the United Kingdom, the United States, and the European Union (represented by the European Commission).

at the expense of developing (and OACPS) countries that are mining or processing the raw materials (Vekasi, 2023).

Currently, no OACPS country is part of the MSP,[29] which is essentially aimed at countries that have similar objectives of catalyzing public and private investments in responsible mineral supply chains globally. However, the MSP Forum, which launched in April 2024, is expected to have a wider membership, with a different objective from that of the MSP. According to the EU, the MSP Forum is a multilateral cooperation platform within the framework of the MSP. It will convene raw material-producing and consuming countries at various stages of development and will support projects and promote policies to strengthen mineral value chains. One of the objectives is also to support local value addition in producing countries (EC, 2024d). The Forum will include OACPS countries such as Namibia, Rwanda, the DRC, and Zambia, with whom the EU has signed Memorandums of Understanding (MOUs).

Critics have pointed to the risks of exacerbating global divides between "the North and the South" through clubs of developed countries that exclude other nations based on discretionary criteria. From a regulatory perspective, they may create new forms of protectionism, create new types of supply chain bottlenecks, drive prices upwards, and negatively impact the development of green technologies.

5.3 International Trade and Investment Frameworks

In most OACPS countries, the mining industry was set up during colonial times, where minerals were extracted to serve the industrial development of colonial states. Still today, mining activities remain essentially based on an extractive model, whereby raw materials are mined and exported with limited processing outside producing countries. While trade and investment frameworks may have evolved over the years, they nonetheless are built upon historical frameworks, which created very few linkages at the domestic level.

This section provides a brief overview of trade and investment frameworks that are relevant to CRMs in OACPS member countries.

5.3.1 Unilateral Trade Preferences

5.3.1.1 The Generalized System of Preferences

The flow of goods and services is generally regulated by trade and investment frameworks and agreements. These can be unilateral, bilateral, or multilateral. Unilateral trade frameworks include schemes such as the Generalized System of Preferences (GSP),[30] a voluntary, non-reciprocal trade scheme implemented by developed countries that provide "preferential" tariff treatment to imports from developing countries.

An EU duty-free and quota-free (DFQF) system, called Everything But Arms (EBA), which is a variant of the GSP, is geared toward LDCs. This scheme "removes tariffs and quotas for all

[29] For more information about the MSP, see U.S Department of State, https://www.state.gov/minerals-security-partnership/#:~:text=The%20MSP%20is%20a%20collaboration,critical%20minerals%20supply%20chains%20globally.

[30] See: https://unctad.org/publication/generalized-system-preferences-how-much-does-it-matter-developing-countries#:~:text=The%20Generalized%20System%20of%20Preferences%20(GSP)%20scheme%20is%20a%20voluntary,to%20imports%20from%20developing%20countries.

imports of goods (except arms and ammunition) coming into the EU from LDCs" (EC, 2019). In the context of the new domestic content quotas that will be imposed on imports under the CRMA, it remains to be seen if the EU will continue to apply DFQF to LDCs or if CRMs will be exempted from the DFQF scheme.

Since most developed countries are significant importers of CRMs and mid-stream value chain products, all CRMs produced in resource-rich developing countries (and by OACPS countries) are covered under GSP schemes, unless the latter have a bilateral trade arrangement with their partners. Non-LDC countries that are covered by the GSP generally trade their CRM duty free. Again, in light of the CRMA's new domestic content requirements, it remains to be seen how the GSP scheme will evolve in the future.

5.3.1.2 The Africa Growth and Opportunity Act

U.S. trade and investment policies with African countries are defined under two sets of instruments. First, the Africa Growth and Opportunity Act (AGOA), enacted in 2000, is a unilateral trade preference program that provides duty-free access to the U.S. market for 1,800 goods from eligible African countries that are not available to other regions (Office of the United States Trade Representative, n.d.).

The product coverage is limited,[31] and only a few countries manage to use AGOA to its full extent.[32] Last extended in 2015, the AGOA is set to expire in 2025. The United States has signalled its intention to review its trade relationship with African countries to seek market access with wider coverage, building on the AfCFTA.

The second set of instruments covers investment. The United States has a series of Trade and Investment Framework Agreements (TIFAs) with a number of African countries, as well as with the Caribbean Community (CARICOM), and in the Pacific, with Fiji.[33] TIFAs provide frameworks for strategic dialogues on trade and investment issues between the United States and its counterparts. The objective is to discuss issues of mutual interest to improve cooperation and enhance opportunities for trade and investment between the United States and its partner countries. Examples of cooperation consultation include market access, labour, the environment, protection and enforcement of intellectual property rights, and, in some cases, capacity building. CRMs are not explicitly mentioned in TIFAs. However, recently, given the strategic importance of securing CRMs, the United States, like other industrialized countries, have started strategic discussions under MOUs (see Section 5.1.5).

5.3.2 Legal Frameworks Under the Multilateral Trading System

At the global level, multilateral trade is guided by legal instruments that fall under the WTO.[34] The WTO provides a framework for negotiating and formalizing trade agreements. It has a dispute resolution process that aims to enforce participants' adherence to WTO agreements. It covers trade in goods and services, intellectual property rights, a number of sectoral

[31] Key service sectors such as financial, digital, travel, and business services are not included.

[32] Only 18 of 39 countries have finalized an AGOA utilization strategy. See: https://ustr.gov/issue-areas/trade-development/preference-programs/african-growth-and-opportunity-act-agoa.

[33] For the list of US-TIFA agreements, see https://ustr.gov/trade-agreements/trade-investment-framework-agreements

[34] The main goal of the WTO is to ensure that trade flows as smoothly, predictably, and freely as possible, thereby contributing to economic growth and development worldwide.

areas (such as agriculture and fisheries), and crosscutting issues (such as technical barriers to trade).

Several agreements under the WTO regulate measures that are relevant to CRM supply chains. Measures such as quantitative restrictions (most notably, quotas) are prohibited. Other measures, such as performance requirements (such as local/domestic content rules), are highly regulated. For instance, the mere fact of identifying a list of raw materials considered strategic or critical can be perceived as a quantitative restriction. Other measures, such as local content requirements, put conditions on sourcing from third countries or on domestic industries that can be considered discriminatory (Ramdoo, 2016). Many of these policies are not compatible with the Agreement on Trade-Related Investment Measures (TRIMs Agreement).[35] However, it is interesting to note that no country has recognized their CRM-related domestic content requirements as trade-related investment measures, and therefore none has made notifications in that sense (Committee on Trade-Related Investment Measures, 2024).

Governments across the world are using subsidies to support the energy transition (Kramer, 2023). While "green" subsidies can help to address market failures, they need to be carefully drafted to avoid distorting markets. Similar to performance requirements, subsidies are highly regulated by the WTO. They are prohibited if they take the form of a direct subsidy, granted to an enterprise, an industry, or a region, and are contingent on the use of domestic products (local content subsidies), within the meaning of Article 3.1 (b) of the Agreement on Subsidies and Countervailing Measures[36] (ASCM) (Ramdoo, 2016). A summary of measures disciplined or prohibited at the WTO is in **Appendix G**.

While local content measures are more pervasive, subsidies are generally provided by countries that have the financial capacity to do so, with the risk that this might undermine the efforts of developing countries that are not in a position to follow suit. In that regard, China has often been targeted for providing harmful subsidies to its strategic economic sectors, and in particular, to digital and energy transition sectors (which require upfront development of mining assets, such as REEs). Through state support directed at specific supply chains, the country managed to become the leader in energy and digital transition technologies over time. As Figure 2 highlights, the high sliding concentration toward mid-stream and downstream supply chains in China is a serious cause of concern for global supply chains.

In reaction to reduced risks associated with highly concentrated supply chains, these past few years have seen massive announcements of public interventions across the world. The United States and the EU are implementing substantial green subsidy schemes to boost investments in renewable technologies. These schemes aim to encourage industrial development.

[35] For more details about the relevant WTO legal provisions that are relevant to CRMs, see Ramdoo, 2016.

[36] Article 3.1(b) of the ASCM, in particular prohibits, the use of "subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods,"

BOX 4. EU AND U.S. GREEN SUBSIDIES

To accelerate their transition to a greener economy, the United States and the EU have announced substantive subsidy schemes to boost private investments in the renewable energy and e-mobility sectors. The 2022 U.S. IRA has committed USD 400 billion in investments and subsidies to reduce GHG emissions in the United States and to fast-track the adoption of renewable technologies (McKinsey, 2022).

Some provisions of the act, in particular domestic sourcing and local production requirements for batteries and EVs, have been largely criticized, notably by the EU and Japan, as being trade-restrictive practices, and therefore in violation of WTO agreements (Conley & Botwright, 2023). Measures such as the USD 7,500 tax credit for consumer purchases of EVs and manufacturing subsidies for battery and wind turbine producers are considered to provide unfair advantages to U.S. companies.

In response, the EU has proposed its own green subsidy package. In February 2024, a provisional Net-Zero Industry Act (accompanying the CRMA) was agreed by the Council of the EU and the Parliament. These initiatives will help implement the Green Deal Industrial Plan for the Net-Zero Age (the Net Zero Plan), which is part of the broader European Green Deal. A few landmark changes are expected. Significant financial support will be provided by the EC and the European Investment Bank to increase the additional support that is already available under RePowerEU and the InvestEU Programs, as well as the Innovation Fund. For instance, EUR 25.4 billion will be added to the existing EUR 225 billion in loans under RePowerEU. InvestEU will provide guarantees for investment in green infrastructure. Furthermore, the EU will introduce new tax breaks and loosen the EU's state aid rules to further accelerate private sector renewable investment. Strategic projects will be prioritized.

Source: Norton Rose Fullbright, 2024.

While both subsidy schemes are important measures to help reduce GHGs and accelerate climate action, they could harm the ability of other countries to develop their own green industries. Moreover, they could exacerbate existing trade tensions, further contribute to geo-economic fragmentation, and impose high fiscal costs on consumers. If done in a non-cooperative manner, they may leave OACPS and other developing and emerging economies on the sidelines.

5.3.3. Binding Trade Agreements Between OACPS Countries and Third Parties

Countries with strong downstream industrial capacities and that import significant amounts of CRM—such as the United States, the EU, and China—seek to use trade and investment frameworks to guarantee market access at an affordable price and diversify their sources of supply, in order to derisk and sustain their midstream and downstream industries (Kowalsky & Legendre, 2023).

Several OACPS countries entered into Economic Partnership Agreements (EPAs), which are reciprocal trade agreements with the EU. The EPA process, which started in 2002, was disappointingly slow and remains incomplete to date. Twenty years after the start of the negotiations (and 15 years after the deadline to complete the negotiations), only 16 African

countries have signed a deal (see **Table H1 in Appendix H**), which covers only trade in goods. The Caribbean region is the only one that has signed a full and comprehensive EPA in 2008. Only two out of the 15 Pacific countries, Fiji and PNG, have signed an EPA.

In a nutshell, while EPAs are reciprocal trade agreements, they are asymmetric. The EU agreed to provide **full DFQF market access for all goods** (except arms) coming from signatory OACPS countries. On their side, OACPS signatory countries opened up an average of 80% of their markets over up to 25 years to EU products. EU's DFQF commitments include CRMs at all levels of value chain development and make no reference to supply chain concentration.

Importantly, all EPAs (except for the CARIFORUM in the Trade in Goods chapter) contain **standstill clauses** (see **Table H2 in Appendix H**). This means that parties to the EPA have agreed to keep the market at least as open in the future as it was at the time that the agreement concluded. Concretely, the standstill clauses in the EPAs ensure that after the entry into force of the agreement, the parties (i) will introduce no new tariffs; (ii) will not raise existing tariffs; and (iii) once eliminated, will not be reintroduced (Bilal & Ramdoo, 2010).

Moreover, trade in CRM, in particular the EU's request to eliminate **export restrictions**, was one of the key contentious issues during EPA negotiations. The request raised concerns in mineral-producing countries on two fronts. First, producing countries saw this as a deliberate move to secure market access to raw materials at a fair and undistorted price on a preferential basis[37] since export restrictions would have been waived only for the EU under the EPAs, at the expense of producing countries' own national interests. Second, countries did not want to limit their policy space in the future to use such trade instruments to leverage domestic fiscal revenues and to design and implement industrial policies, such as the development of downstream manufacturing capacities and the protection of infant industries (Ramdoo, 2014).

EPAs contain provisions on export taxes and quantitative restrictions (see Tables H3 and H4 in Appendix H) that also apply to CRMs. In most cases, the provisions are generic and do not mention specific mineral resources. In a nutshell, the EPA provisions require parties to the agreement to commit to not include new restrictions, including in the form of licensing requirements. However, they do not require countries to explicitly remove existing ones, as liberalization schedules have been made for imports (Bilal & Ramdoo, 2010).

There is some flexibility available for "exceptional circumstances" for developing countries. In such cases, EPAs may allow the introduction of new export duties and quantitative restrictions, but for specific reasons and for a limited time period. These exceptions are not product-specific and can be applied to CRMs in principle. The provision is not automatic; producing countries must meet the conditions required to trigger the exception, consultations must be held, and agreement must be reached among all parties (Bilal & Ramdoo, 2010).

Many OACPS CRM-producing countries are not covered by EPAs and therefore have not made any commitments to discipline their trade policies. It is, however, to be noted that commitments made under EPAs with regard to export duties and other restrictions have not prevented the proliferation of such measures in signatory countries in recent years.

[37] In line with the "Global Europe" strategy of 2006, and in response to the increasing concerns from EU industries regarding access to raw materials, the EC presented a Communication entitled *The Raw Materials Initiative: Meeting Our Critical Needs for Growth and Jobs in Europe* in November 2008. See: https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/raw-materials-initiative-needs-growth-and-jobs-europe

With the exception of the Caribbean countries that signed a full EPA in 2008 (see Section 5.1.3), no other OACPS countries have bilateral binding trade agreements with European countries. Kenya signed an EPA with the United Kingdom after Brexit on similar terms to avoid market disruptions with one of its key trading partners (Department for International Trade, 2020).

5.3.4 Bilateral Investment Treaties

In the absence of a multilateral agreement on investment, foreign investments are mostly governed by bilateral investment treaties (BITs), which are international agreements between two or more countries. They contain the terms and conditions of foreign private investment between parties to the agreement (Nikiema, 2014; Ramdoo, 2016). According to UNCTAD 2024, there are about 2,220 BITs in force globally.

All OACPS CRM-producing countries have signed BITs. These agreements are seen as additional legal protection for mining investors because they allow investors the possibility to resort to international arbitration in case of a dispute with the host country. Most BITs include specific clauses that largely limit the scope of signatory countries to design legal frameworks that may impact investment in raw materials (Nikiema, 2014). Two measures are relevant for OACPS CRM-producing countries:

- non-discriminatory provisions, where a government cannot provide more favourable treatment to local firms compared to foreign firms. For instance, countries cannot provide incentives/subsidies and pre-establishment rights or design indigenization policies without running the risk of being sued by investors.
- measures restricting or prohibiting any form of performance requirements, including pre-establishment rights, requirements for joint ventures, beneficiation requirements, ownership requirements, export conditions, etc.

5.3.5 Non-Binding Trade and Investment Frameworks

As experienced by the 18-year-long (unfinished) EPA process, FTAs take a long time to negotiate and may not always secure the interests of partners. In addition, slow progress in advancing negotiations at the WTO has led countries to find other creative ways to enter into CRM partnerships.

An emerging trend observed in recent years is the design and implementation of non-binding strategic partnership agreements, and MOUs focused on specific aspects of cooperation, notably the security of access to CRMs. MOUs are both soft law and soft-power tools (Soule, 2023) and set the frame for deeper engagement between signatory states. They have less stringent conditions and commitments than formal agreements but nonetheless engage states in longer-term cooperation because they are signed.

This section briefly looks at the types of agreements being signed with the United States and the EU.

5.3.5.1 U.S. MOUs in Africa

In December 2022, in the margins of the U.S.–Africa Leaders Summit in Washington, the United States signed a trilateral MOU with the DRC and Zambia. The signature of this MOU at the highest level gave a strong political signal that the United States was ready to work to

advance the development of an integrated value chain across both countries to produce EV batteries. At the same time, the MOU aims to secure access to CRMs for the U.S.'s own clean energy supply chains as a way to diversify away from other sources.

In 2024, the United States combined forces with the EU and the African Development Bank to support the revitalization of the Lobito Corridor, a 122-year-old infrastructure corridor that links the DRC with the port of Lobito in Angola that was developed during the colonial period. In 2004, after the Angolan war, China invested USD 2 billion to revamp the corridor. In 2022, a U.S.-led consortium won a bid to further develop the corridor. This project is linked to United States' strategic engagement in the region to counter China's influence, gain access to CRMs, and reposition itself in Africa.

5.3.5.2 EU: Strategic partnerships with Africa

As a way to implement the 2023 CRMA, and in a move to diversify its CRM suppliers and hence reduce its dependency on single third-country suppliers, the EU is entering into strategic partnerships with resource-rich countries. Rather than negotiating binding agreements, the EU has opted for MOUs to establish areas of cooperation that are expected to benefit both parties.

Relevant to OACPS countries, MOUs fall under the EU Global Gateway strategy. The partnerships will facilitate trade and investments to ensure secure, sustainable, and resilient raw material value chains for the EU necessary to meet the ambitions of climate neutrality by 2030 and ensure that necessary raw materials are available for the industrial needs of the digital economy in EU member states (EC, 2024c).

In Africa, MOUs were signed with Namibia in November 2022; with the DRC[38] and Zambia[39] in October 2023; and with Rwanda in February 2024.[40]

The MOUs cover five areas of cooperation:

- the integration of sustainable raw materials value chains,
- the mobilization of funding for the development of infrastructure,
- cooperation to achieve sustainable and responsible production,
- cooperation on research and innovation, and
- capacity building to enforce relevant rules.

Two separate MOUs with similar objectives were signed with the DRC and Zambia. Both countries are key CRM producers, such as cobalt (the DRC is the largest global producer), copper, lithium, nickel, REEs, and manganese. The agreements fall within the broader Lobito Corridor Project, which also includes Angola, equally supported by the United States and the African Development Bank.

[38] See: https://www.iea.org/policies/18062-drc-eu-strategic-partnership-on-sustainable-raw-materials-value-chains

[39] See: https://single-market-economy.ec.europa.eu/document/download/c7aefb66-ef6b-411c-860d-b76505ff4f1d_en?filename=MoU_CRM_EU-Zambia_26_10_2023_signed.pdf&prefLang=de

[40] Outside Africa, the EU has signed strategic partnerships with Canada (June 2021), Ukraine (July 2021), Kazakhstan (November 2022), Argentina (June 2023), and Chile (July 2023).

Cooperation to support the Lobito Corridor is expected to provide financial support and technical know-how to develop cross-border infrastructure between the DRC and Angola to improve regional competitiveness. While the revitalization of transport infrastructure is key for the battery supply chains currently being developed in Zambia and the DRC, the countries need to ensure that the corridor is used to facilitate the development of their supply chains rather than fast-track the export of raw materials through the corridor to third-party signatories of the MOUs.

Rwanda is a key global supplier of tantalum and also produces tin, tungsten, gold, and niobium. It has the potential for lithium and REEs. The country has ambitions to become a regional hub for mineral value addition. The country expressed the importance of the development of sustainable supply chains, including using the MOU as an engine of investment (EC, 2024b).

5.3.5.3 Chinese MOUs in Africa

It is estimated that as of April 2022, of 54 African countries, 52 have signed MOUs under the Belt and Road Initiative with China (Gu et al., 2022). These agreements have different scopes, which depend on the strategic interests of the parties to the agreements. An estimated 63% of all Chinese foreign direct investment in 2020 was directed to 10 countries: South Africa, the DRC, Zambia, Ethiopia, Angola, Nigeria, Kenya, Zimbabwe, Algeria, and Ghana (Gu et al., 2022). These are strategic partners for China, either because of their resource interests or because they have infrastructure facilities that can facilitate China's access to other countries. The MOUs are not publicly available and therefore cannot be properly analyzed.

Besides those agreements, China has entered into more specific MOUs with African countries. In 2023, ahead of the state visit of the Chinese President to South Africa, two MOUs were signed, respectively, between the Department of Trade, Industry and Competition and the China Africa Development Fund, and between the South African Industrial Development Corporation and the Bank of China. The aim was to facilitate access to finance for investment and industrial development to stimulate value addition and create employment. Key areas identified for cooperation included the manufacturing of medical devices, support to the green economy, CRM value chains, manufacturing of EVs, and the development of the hydrogen sector (Department of Trade, Industry and Competition, 2023). Similarly, in February 2023, Ethiopia and China signed an MOU to foster economic cooperation in strategic sectors, which include industrial parks, processing, manufacturing, and construction (Ministry of Finance Ethiopia, 2023).

5.3.5.4 Implications for OACPS Countries

MOUs are an interesting set of frameworks. Although they are non-binding agreements, they can deliver on concrete outcomes precisely because the agreements provide more flexibility to parties to adjust the scope of the partnerships when needed and engage financial and technical resources without having to go through legislative processes.

The scope of the different strategic partnerships tends to support all parties' interests. From the EU and the U.S. side, the purpose is to secure access to much-coveted CRMs, which are likely to be in short of supply in the next few years, given the pace of demand growth. In exchange, producing countries have expressed their interest in attracting investors in supply chains, infrastructure development, and other logistics and technologies to facilitate the development of green technology supply chains, including at the regional level.

However, as with any other partnerships, there is always a risk that the balance of benefits might tip toward countries that have the strongest interests in such agreements—in this case, the EU and the United States. Although the MOUs themselves are not binding, investments that are likely to be facilitated through those MOUs will be bound by BITs.

On a practical basis, we have observed an increasing number in off-take and long-term supply agreements, notably between green and digital corporate off-takers and mining companies in producing countries to secure access to CRMs. One of the objectives of the MOUs is to facilitate more such agreements so that industrial supply chain actors in Europe and the United States can secure access to CRMs. While this will provide market access security—and hence trigger more investments in greenfield projects to increase the supply of CRMs—there is a risk that CRMs will not be available for domestic/regional value chain projects. OACPS countries therefore need to be mindful of the implications of such deals to ensure that they can leverage their mineral resources for their own development objectives.

6.0 Conclusion: Navigating global dynamics, safeguarding interests, and addressing concerns

This background paper provides a cursory state of play on key issues that are relevant to CRMs in OACPS countries. The report lays out the production and trade landscape for the CRMs that account for an important share of different countries across the three regions. What comes out clearly is the importance of OACPS's current and future production capacities to meet the growing demand for CRMs as the world transitions to a low-GHG-emission and digital economy.

As highlighted in the introduction, demand is set to grow exponentially, with a slower expected pace for supply to adjust. This means that countries with production potential will have increasing leverage to engage global partners that want to invest and partner in their economies.

The report also highlights the glaring shortfalls in beneficiation capacities to move up the value chain. In Africa, some CRMs, like copper, are processed either in producing countries or in neighbouring countries. However, this is not the case for all CRMs. Importantly, the beneficiation facilities in the Caribbean and Pacific producing countries are largely absent beyond the first stage of communition, which means that values and jobs are exported abroad alongside the raw materials.

Beyond the mineral value chain, there is only anecdotal evidence of initiatives in place to develop mineral-based economies. A landmark initiative is the DRC–Zambia battery supply chain, which is now extending to Angola and other neighbouring countries. In addition, Special Economic Zones are being set up to facilitate industrial activities for the battery supply chain.

South Africa, which is no longer an OACPS member country but has very strong ties with its regional partners, is likely to drive collaboration for mineral value chains and related supply chains as it moves forward with its plans to develop battery supply chains for EVs and energy storage facilities, seeks renewable energy solutions to its power crisis, and develops its hydrogen economy.

OACPS countries need to assess the extent to which their domestic regulatory frameworks and their agreements with third countries are fit for purpose with regard to their own industrialization ambitions and considering their role in changing geopolitical landscapes to secure access to CRMs. Several agreements (like the EPA and BITs) were negotiated at a time when the global political playbook was different and when OACPS countries were in their nascent stage of industrialization. Many aspects of these agreements no longer stand or are not respected, as partners have taken unilateral measures that may violate the terms of their agreements.

Moreover, the MOU signing spree has created confusion and expectations, as their status and scope are not always clear, and the relationship with existing frameworks is not clearly defined or understood. Again, countries may want to examine these agreements with a geopolitical and geo-economic lens to make sure they do not inadvertently harm their development ambitions. The following issues are worth considering.

6.1 Political and Strategic Interests

OACPS countries find themselves at a crucial and complex intersection of global needs, regional dynamics, and domestic realities due to their significant CRM reserves and production, as well as national and regional industrialization ambitions.

As the world increasingly pivots toward sustainable energy and digital transitions, the strategic importance of these resources provides OACPS member countries with an opportunity to leverage their position of strength as global suppliers and as central figures that can provide industrial solutions to their partners to derisk and strengthen global supply chains and market dynamics for the energy and digital transition.

OACPS member countries' positions of strength in the CRM landscape confers them with significant geopolitical leverage. Projected growth in demand for CRM suggests that some OACPS counties are likely to have a growing influence on global markets, increasing bargaining power to engage their partners on fairer trade and investment deals.

However, to realize this potential, it is necessary to have a clear OACPS strategy on CRM that can be used as a compass to build coalitions and work collectively to strengthen the group's positioning vis-à-vis international trading and investment partners. Currently, these opportunities are undercut by a lack of unified strategies and negotiation capacities, leaving individual countries susceptible to bilateral agreements that may not fully cater to their development needs and may further divide them rather than consolidate their positions.

However, this strategic advantage is not without its challenges, especially in the context of a rapidly shifting geopolitical landscape marked by intense competition and the formation of strategic alliances to secure access to raw materials, which tend to be formed among like-minded countries. This environment has placed many OACPS countries in two complex conundrums:

- How to respond to growing pressures for global demand and security of supply without compromising domestic and regional industrial development priorities through mineral beneficiation and related supply chains.
- How to ensure that increased supply of raw materials does not come at the expense of local communities and the environment.

Unaddressed, these challenges could foster—and widen—imbalances, leading to new forms of dependencies that may result in long-lasting, unfair trade deals, continued dependencies on the production and export of unprocessed raw materials, and missed economic opportunities to build resilient economies.

To reverse this trend, strategic engagement is needed to move away from the historical pit-to-port extractive models. OACPS countries need to identify areas of common interest to align positions in global negotiations on trade, investment, and climate change.

Increased global and bilateral strategic engagements with key producing countries, such as the ones highlighted in Section 5.1.5, may provide a new impetus to co-design and develop win–win framework agreements that work for the benefit of all partners. These need to be clearly articulated and transparent to avoid scenarios where economic and political strings are attached to CRM partnerships or where the terms of the agreements are not aligned with the developmental needs of countries.

The path forward for OACPS countries is one of strategic engagement and unity. By leveraging their collective natural endowments and adopting cohesive strategies, they can ensure that their participation in global CRM dynamics not only bolsters their economic and technological advancements but also secures their political autonomy and strategic interests in the face of a complex and evolving global landscape to serve their own long-term interests.

6.2 Economic Interests

The growing global appetite for CRMs has intensified international focus on OACPS countries' reserves and resources. This presents a unique opportunity for African, Caribbean, and Pacific countries to leverage their geopolitical significance to attract investors in strategic domestic and regional industries, access financial markets to develop their mineral resources to bridge the expected supply gap, and enter into strategic partnerships with partners willing to invest in technologies and innovation to support high-value-added industrial ecosystems.

The economic significance of CRMs for OACPS countries cannot be overstated. However, this potential is often marred by a lack of value addition and local beneficiation. Most countries export raw materials without significant processing or refining, leading to lost opportunities for local industry development, job creation, and higher revenue streams.

To safeguard their economic interests, OACPS countries must develop comprehensive national and regional strategies for value addition, such as establishing local processing industries and enhancing technological capabilities. This would not only increase the economic returns from CRMs but also contribute to the development of local industries and the creation of high-quality jobs. Additionally, OACPS countries should pursue diversified economic partnerships to reduce over-reliance on single export markets and mitigate the risks of economic fluctuations and technological changes that may render some CRMs redundant (and stranded).

Moreover, the volatility of CRM markets can lead to unstable incomes, making it crucial for OACPS countries to develop strategies that include stabilizing mechanisms, strategic reserves, and revenue diversification. Furthermore, there is a need for investment in local infrastructure and workforce skills to not only extract but also process and manufacture products with CRMs, aligning with the broader developmental agenda of industrialization, technological advancement, and sustainable economic growth.

OACPS needs to advocate for more equitable and transparent global governance mechanisms for CRM extraction, value addition, and trade and investment frameworks. This entails ensuring that trade and investment deals do not lock countries into the pit-to-port model of raw material exports but rather respect national development and industrial objectives and support sustainable development, equitable investment practices that prioritize local benefits and capacity building, and enhanced participation in international decision-making forums. Furthermore, strengthening regional collaboration among OACPS members can bolster collective bargaining power, foster strategic partnerships, and diminish dependencies on external powers.

6.3 Social and Environmental Challenges

The extraction and processing of CRMs pose significant social and environmental challenges, including land and environmental degradation, water pollution, and community displacement. Often, the economic imperatives of CRM exploitation overshadow the social and environmental well-being of local communities, leading to social unrest and conflicts, damage to the reputation of countries, and long-term ecological harm, undermining the very development goals that the exploitation of CRMs is meant to support.

OACPS countries must, therefore, ensure that the extraction and processing of CRMs are aligned with environmental sustainability and social welfare standards. This includes implementing and enforcing strict environmental regulations, safeguarding the rights and participation of local communities, ensuring fair and transparent benefit-sharing mechanisms, and investing in the communities affected by mining operations. Furthermore, international partnerships and investments should be scrutinized for their adherence to sustainable and ethical practices.

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Appendix A. Overview of policies and terminologies (see Appendix B for the associated list of minerals)

Country	Terminology	No. of minerals	Definition and rationale	Key documents
Australia, June 2023, updated February 2024[41]	Critical minerals	31	"Critical minerals" are metals and non-metals deemed "essential to the functioning of our modern technologies, economies or national security" where "there is a risk that its supply chains could be disrupted."	Commonwealth of Australia, 2023, 2024.
	Strategic materials	5	"Strategic materials" are "important for the global transition to net-zero and broader strategic applications … for which Australia has geological potential for resources, is in demand from its strategic international partners." However, their supply chains are not currently vulnerable enough to meet the criteria for the Critical Minerals List.	
Brazil, 2021	Strategic minerals Category 1	4	"Strategic minerals" are divided into three categories: Category 1: "Minerals with a high percentage of imports, and necessary to supply vital sectors of the economy."[42]	Ministry of Mines and Energy, 2021; see also: Pope & Smith, 2023.

[41] In February 2024, Australia placed nickel on the Critical Minerals List, giving nickel companies the opportunity to access billions of dollars in Commonwealth funding.

[42] Most of these minerals are demanded by the Brazilian agricultural sector for use in domestic fertilizers, given the importance of soy, beef, and other agricultural exports. They can be referred to as *agro-minerals*.

Country	Terminology	No. of minerals	Definition and rationale	Key documents
	Category 2	16	Category 2[43]: "Important minerals for use in high-tech products and processes, including batteries, and green and digital technologies."	
	Category 3	8	Category 3[44]: "Minerals with comparative advantages that are essential to the economy because they generate a surplus in the country's trade balance."	
Canada, 2022	Critical minerals	34	"Critical" minerals are (i) essential to Canada's economic security and its supply is threatened, (ii) required for the national transition to a low-carbon economy, and (iii) sustainable sources of highly strategic critical minerals for partners and allies.	Natural Resources Canada, 2022, 2024.
China, 2016–2020[45]	Strategic minerals (i) Energy minerals	5	"Strategic" minerals ensure national economic security, national defence, and the security and development needs of strategic emerging industries. Three categories are identified: (i) energy minerals	People's Republic of China, 2016.
	(ii) Ferrous minerals	14	(ii) ferrous minerals	
	(iii) Non-ferrous minerals	4	(iii) non-ferrous minerals.	

[43] These minerals are generally exported from Brazil for processing and used for production purposes in global value chains. They can be referred to as *technological minerals*.

[44] They are minerals of high quantity, such as iron ore, or high value, such as gold. They can be referred to as *commercial minerals*.

[45] China, 2016–2020: (i) energy minerals include oil, gas, shale gas, coal, coal bed methane, uranium; (ii) ferrous minerals include iron, chromium, copper, aluminum, gold, nickel, tungsten, tin, molybdenum, antimony, cobalt, lithium, rare earths, zirconium; and non-ferrous minerals include phosphorus, potash, crystalline graphite, and fluorite.

Country	Terminology	No. of minerals	Definition and rationale	Key documents
European Union, Critical Raw Materials Act 2024	Critical raw materials	34	(i) "Critical" raw materials: "Raw materials of high importance to the economy and whose supply is associated with a high risk."	European Commission, 2023b; EU Critical Raw Materials Act, 2024.[46]
	Strategic minerals	17	(ii) "Strategic" raw materials: "Raw materials that score among the highest in terms of strategic importance, forecasted demand growth and difficulty of increasing production."	
India, June 2023	Critical minerals	30	"Critical minerals" are deemed "essential for economic development and national security. The lack of availability of these minerals or the concentration of extraction or processing in few geographical locations may lead to supply chain vulnerability and disruption."	Ministry of Mines, 2023.
South Africa, 2022	Minerals of the future	6	Strategic commodities are identified as critical minerals and metals that are essential for responding to the shift toward the green economy, low-carbon energy, and digitization, among others.	Department of Mineral Resources and Energy, 2022.
	Steelmaking	2		
	Energy minerals	2		
	Competitive advantage and hydrogen economy	2		
	Battery minerals	2		

[46] Referenced as Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020Text with EEA relevance.

Country	Terminology	No. of minerals	Definition and rationale	Key documents
United States, 2022	Critical minerals	50	"Critical" minerals have the following characteristics: (i) non-fuel mineral or mineral material essential to the economic and national security; (ii) the supply chain is vulnerable to disruptions; and (iii) it serves an essential function in the manufacture of a product, the absence of which would have significant consequences for the economy or national security.	United States Geological Survey et al., 2022.
United Kingdom, 2023	Critical minerals	18	"Critical" minerals are those "with high economic vulnerability and high global supply risk."	United Kingdom Department for Business & Trade and Department for Business, Energy & Industrial Strategy, 2023.
	Watch list	5	The UK has a "watch list" of 5 minerals, that are monitored given their increasing risk of becoming highly critical.	
Japan, 2021, updated in 2023[47]	Critical minerals	35	In Japan, the Ministry of Economy, Trade and Industry (METI) has named 35 minerals as critical. The three main objectives of the list are: (1) de-risking and reducing dependence (mainly from China), (2) decarbonization, and (3) economic stability.	Nogimori, 2024.
South Korea, 2023	Critical minerals	33	South Korea identified 33 minerals as being "critical." This is motivated by the country's high import dependence and by uncertainties caused by supply concentration and geopolitical challenges. South Korea aims to reduce import dependency on them from 80% to 50% and increase recycling rates from 2% to 20% by 2030.	Korean Ministry of Trade, Industry and Energy, 2023; see also Lee & Hool, 2023.
	Strategic minerals	(10)		

Source: Author's compilation.

[47] Uranium was added to Japan's critical minerals list in 2023.

Appendix B. List of critical minerals (CMs) in selected countries

	European Union critical raw materials, 2024[48]		U.S. CMs, Updated in 2023[49]		Canada CMs 2022[50]	Australia CMs, 2023[51]		United Kingdom CMs, 2022[52]	South Africa, 2022	India, CMs 2023[53]	Japan CMs (updated 2024)[54]	China (2016–2020)[55]			Brazil Strategic and Critical Minerals, 2023[56]			South Korea, SM, 2023[57]	
	CRM	SRM	CMs for Energy (2023)	CM List (2021)		CM List	SM List		CN			Energy	Metallic	Non-metallic	G1	G2	G3	CM	SM
Aluminum	Bauxite/ Alumina Aluminum	Bauxite/ Alumina/ Aluminum	✓	✓	✓		✓						✓				✓	✓	
High-purity alumina						✓													

[48] Source: European Council, 2024.
[49] Source: Department of Energy, 2023.
[50] Source: Natural Resources Canada, 2022.
[51] Source: Australian Government, 2023.
[52] Source: International Energy Agency, 2022.
[53] Source: Ministry of Mines, 2023.
[54] Source: MineralPrices.com, 2023.
[55] Source: Pope & Smith, 2023, Appendix 1.
[56] Source: Pope & Smith, 2023.
[57] Source: International Energy Agency, 2023a.

	European Union critical raw materials, 2024[48]		U.S. CMs, Updated in 2023[49]		Canada CMs 2022[50]	Australia CMs, 2023[51]		United Kingdom CMs, 2022[52]	South Africa, 2022	India, CMs 2023[53]	Japan CMs (updated 2024)[54]	China (2016–2020)[55]			Brazil Strategic and Critical Minerals, 2023[56]			South Korea, SM, 2023[57]	
	CRM	SRM	CMs for Energy (2023)	CM List (2021)		CM List	SM List		CN			Energy	Metallic	Non-metallic	G1	G2	G3	CM	SM
Antimony	✓			✓		✓		✓		✓	✓		✓					✓	
Arsenic	✓			✓		✓													
Baryte	✓			✓															
Beryllium	✓			✓		✓				✓	✓								
Bismuth	✓	📍		✓	✓	✓		✓		✓	✓							✓	
Borates	✓	📍 Boron – metallurgy grade									✓								
Cadmium										✓									
Cesium				✓	✓														
Chromium				✓	✓	✓			✓				✓					✓	
Cobalt	✓	📍	📄	✓	✓	✓		✓		✓	✓	✓	✓			✓		✓	✓
Coking coal	✓								✓										

	European Union critical raw materials, 2024[48]		U.S. CMs, Updated in 2023[49]		Canada CMs 2022[50]	Australia CMs, 2023[51]		United Kingdom CMs, 2022[52]	South Africa, 2022	India, CMs 2023[53]	Japan CMs (updated 2024)[54]	China (2016–2020)[55]			Brazil Strategic and Critical Minerals, 2023[56]			South Korea, SM, 2023[57]	
	CRM	SRM	CMs for Energy (2023)	CM List (2021)		CM List	SM List		CN			Energy	Metallic	Non-metallic	G1	G2	G3	CM	SM
Copper	✓	●	📄*		✓		✓			✓	✓					✓	✓	✓	
Electrical steel			📄*																
Fluorine			📄			✓					✓								
Fluorspar	✓			✓	✓									✓					
Gallium	✓	●	📄	✓	✓	✓		✓		✓	✓							✓	
Germanium	✓	●		✓	✓	✓				✓	✓								
Graphite	✓	● Battery grade	📄	✓	✓	✓		✓		✓	✓			✓		✓	✓	✓	✓
Gold													✓				✓		
Hafnium	✓			✓		✓				✓	✓								
Helium	✓				✓	✓													
Indium				✓	✓	✓		✓		✓	✓							✓	

	European Union critical raw materials, 2024[48]		U.S. CMs, Updated in 2023[49]		Canada CMs 2022[50]	Australia CMs, 2023[51]		United Kingdom CMs, 2022[52]	South Africa, 2022	India, CMs 2023[53]	Japan CMs (updated 2024)[54]	China (2016–2020)[55]			Brazil Strategic and Critical Minerals, 2023[56]			South Korea, SM, 2023[57]	
	CRM	SRM	CMs for Energy (2023)	CM List (2021)		CM List	SM List		CN			Energy	Metallic	Non-metallic	G1	G2	G3	CM	SM
Iron													✓				✓		
Lead																		✓	
Lithium	✓	Battery grade	📄	✓	✓	✓		✓	✓	✓	✓		✓			✓		✓	✓
Magnesium	✓	Magnesium metal	📄	✓	✓	✓		✓			✓							✓	
Manganese	✓	Battery grade		✓	✓	✓		!	✓		✓						✓	✓	✓
Molybdenum					✓	✓				✓	✓		✓		✓			✓	
Nickel	✓	Battery grade	📄	✓	✓	✓	✓	!		✓	✓		✓			✓		✓	✓
Niobium	✓			✓	✓	✓				✓	✓					✓	✓	✓	
Phosphate rocks	✓													✓	✓				
Phosphorus	✓						✓	!		✓									

	European Union critical raw materials, 2024[48]		U.S. CMs, Updated in 2023[49]		Canada CMs 2022[50]	Australia CMs, 2023[51]		United Kingdom CMs, 2022[52]	South Africa, 2022	India, CMs 2023[53]	Japan CMs (updated 2024)[54]	China (2016–2020)[55]			Brazil Strategic and Critical Minerals, 2023[56]			South Korea, SM, 2023[57]	
	CRM	SRM	CMs for Energy (2023)	CM List (2021)		CM List	SM List		CN			Energy	Metallic	Non-metallic	G1	G2	G3	CM	SM
Potash					✓					✓				✓	✓				
Rare-earth elements	✓	For magnets (Nd, Pr, Tb, Dy, Gd, Sm, Ce)	Dy, Nd, Pt, Tb	✓	✓	✓		✓	✓	✓	✓		✓			✓		✓	N, Dy, Tb, Ce, La
Rhenium						✓				✓	✓								
Selenium						✓				✓	✓							✓	
Silicon			*			✓				✓	✓					✓		✓	
Silicon carbide			*																
Silicon metal	✓							✓											
Sulphur															✓				
Tantalum	✓			✓	✓	✓		✓		✓	✓					✓		✓	
Strontium	✓									✓	✓							✓	

	European Union critical raw materials, 2024[48]		U.S. CMs, Updated in 2023[49]		Canada CMs 2022[50]	Australia CMs, 2023[51]		United Kingdom CMs, 2022[52]	South Africa, 2022	India, CMs 2023[53]	Japan CMs (updated 2024)[54]	China (2016–2020)[55]			Brazil Strategic and Critical Minerals, 2023[56]			South Korea, SM, 2023[57]	
	CRM	SRM	CMs for Energy (2023)	CM List (2021)		CM List	SM List		CN			Energy	Metallic	Non-metallic	G1	G2	G3	CM	SM
Tellurium				✓	✓	✓		✓		✓	✓								
Rubidium				✓							✓								
Tin				✓	✓			✓		✓			✓			✓		✓	
Thallium							✓				✓					✓			
Titanium	✓	Titanium metal		✓	✓	✓				✓	✓					✓		✓	
Tungsten	✓			✓	✓	✓		✓		✓	✓		✓			✓		✓	
Vanadium	✓			✓	✓	✓		✓	✓	✓		✓				✓		✓	
Uranium					✓				✓		✓					✓	✓		
Zinc				✓	✓		✓		✓									✓	
Zirconium				✓		✓				✓	✓		✓					✓	
Platinum Group of Metals (PGMs) - 6 metals																			
Ruthenium	✓			✓	✓	✓		!	✓	✓	✓								

	European Union critical raw materials, 2024[48]		U.S. CMs, Updated in 2023[49]		Canada CMs 2022[50]	Australia CMs, 2023[51]		United Kingdom CMs, 2022[52]	South Africa, 2022	India, CMs 2023[53]	Japan CMs (updated 2024)[54]	China (2016–2020)[55]			Brazil Strategic and Critical Minerals, 2023[56]			South Korea, SM, 2023[57]	
	CRM	SRM	CMs for Energy (2023)	CM List (2021)		CM List	SM List		CN			Energy	Metallic	Non-metallic	G1	G2	G3	CM	SM
Rhodium	✓	🟡		✓	✓	✓			✓	✓	✓								
Palladium	✓	🟡		✓	✓	✓		✓	✓	✓	✓							✓	
Osmium	✓	🟡		✓	✓	✓			✓	✓	✓								
Iridium	✓	🟡	📄	✓	✓	✓		❗	✓	✓	✓								
Platinum	✓	🟡	📄	✓	✓	✓		✓	✓	✓	✓							✓	

❗ *UK watch list*

🟡 *EU strategic raw materials*

📄 *US Critical Materials for Energy List (2023). Materials with an * are not on the Department of Energy Critical Minerals List.*

Source: Author's compilation.

Appendix C. Mapping Selected Critical Raw Materials Against Clean Energy Transition Technologies, Digital Technologies and Societal Needs

	Energy transition technologies						Digital technologies			Society		
			Electric vehicles			Hydrogen						
	Solar photovoltaic	Wind turbines	Lithium-ion batteries	Fuel cells	Electric tractor motors	Electrolyzers	Smartphones, tablets, and laptops	Data transmission networks	Data storage servers	Electronics and appliances	Food, kitchen utensils, and household products (cleaners, paints, etc.)	Medicine (including dental implants, surgical tools, and machines)
Copper	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
Cobalt		✓	✓	✓		✓	✓			✓		✓
Nickel	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓
Manganese		✓	✓	✓		✓	✓	✓	✓	✓		✓
Lithium			✓	✓			✓	✓		✓		✓
Rare-earth elements		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Chromium		✓		✓	✓	✓	✓		✓	✓		✓
Zinc	✓	✓				✓		✓	✓		✓	✓

	Energy transition technologies						Digital technologies			Society		
			Electric vehicles			Hydrogen						
	Solar photovoltaic	Wind turbines	Lithium-ion batteries	Fuel cells	Electric tractor motors	Electrolyzers	Smartphones, tablets, and laptops	Data transmission networks	Data storage servers	Electronics and appliances	Food, kitchen utensils, and household products (cleaners, paints, etc.)	Medicine (including dental implants, surgical tools, and machines)
Platinum Group of Metals				✓		✓	✓	✓	✓	✓	✓	✓
Aluminum	✓	✓	✓	✓	✓	✓		✓	✓			
Vanadium						✓						
Molybdenum	✓	✓		✓	✓	✓						
Graphite			✓	✓		✓	✓			✓		✓
Silicon	✓	✓	✓		✓		✓	✓	✓	✓		✓
Niobium		✓	✓							✓		✓
Iron	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
Gallium	✓						✓	✓	✓	✓	✓	✓
Germanium	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Titanium			✓	✓		✓				✓	✓	✓
Gold			✓	✓		✓	✓	✓	✓	✓	✓	✓

	Energy transition technologies						Digital technologies			Society		
			Electric vehicles			Hydrogen						
	Solar photovoltaic	Wind turbines	Lithium-ion batteries	Fuel cells	Electric tractor motors	Electrolyzers	Smartphones, tablets, and laptops	Data transmission networks	Data storage servers	Electronics and appliances	Food, kitchen utensils, and household products (cleaners, paints, etc.)	Medicine (including dental implants, surgical tools, and machines)
Potassium						✓						
Silver	✓			✓			✓	✓	✓	✓	✓	✓
Tin	✓		✓					✓	✓	✓		✓

Source: Ramdoo et al., 2024, based on Carrara et al., 2023; Internationl Energy Agency, 2023b; Kowalski & Legendre, 2023.

Appendix D. Critical Raw Materials Produced in OACPS Countries, by Global Rank, Share of Global Production, and Level of Concentration of Production

TABLE D1. Chromium

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share Herfindahl-Hirschman Index (HHI)
1	(1)	South Africa	tonnes	7,605,500	51.82	51.82	2,685.52
5	(5)	Zimbabwe	tonnes	644,400	4.39	89.11	19.28
14	(13)	Papua New Guinea	tonnes	43,430	0.30	99.75	0.09
16	(16)	Cuba	tonnes	8,500	0.06	99.90	0.00
17	(17)	Madagascar	tonnes	5,900	0.04	99.94	0.00
21	(21)	Ethiopia	tonnes	700	0.00	100.00	0.00
		Total (OACPS)		**8,308,430**	**56.61**		
		Rest of the world (ROW)			**43.39**		
		Total (WORLD)	**tonnes**	**14,676,208**	**100.00**		**3,096**

Source: World Mining Data, 2024.

TABLE D2. Cobalt

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	Democratic Republic of the Congo (DRC)	tonnes	93,011	69.17	69.17	4,783.87
5	(5)	Cuba	tonnes	3,800	2.83	84.75	7.99
7	(7)	Papua New Guinea	tonnes	2,955	2.20	89.33	4.83
11	(15)	Madagascar	tonnes	1,986	1.48	95.64	2.18
12	(8)	Morocco	tonnes	1,796	1.34	96.98	1.78
16	(14)	South Africa	tonnes	355	0.26	99.65	0.07
17	(17)	Zambia	tonnes	247	0.18	99.83	0.03
18	(13)	Zimbabwe	tonnes	230	0.17	100.00	0.03
		Total OACPS		**104,380**	**77.62**		
		ROW			**22.38**		
		Total (WORLD)	**tonnes**	**134,476**	**100.00**		**4876**

Source: World Mining Data, 2024.

TABLE D3. Manganese

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	South Africa	tonnes	7,098,396	33.45	33.45	1,119.07
2	(2)	Gabon	tonnes	4,240,100	19.98	53.43	399.29
5	(8)	Ghana	tonnes	934,200	4.40	79.42	19.38
9	(9)	Côte d'Ivoire	tonnes	580,000	2.73	92.01	7.47
17	(21)	Zambia	tonnes	56,860	0.27	98.96	0.07
21	(22)	Kenya	tonnes	28,500	0.13	99.62	0.02
22	(27)	Nigeria	tonnes	22,380	0.11	99.72	0.01
24	(23)	Namibia	tonnes	10,250	0.05	99.82	0.00
29	(26)	Senegal	tonnes	4,040	0.02	99.98	0.00
31	(31)	DRC	tonnes	1,000	0.00	100.00	0.00
		Total OACPS		**12,975,726**	**61.15**		
		ROW			**38.85**		
		Total (WORLD)	**tonnes**	**21,219,335**	**100.00**		**1862**

Source: World Mining Data, 2024.

TABLE D4. Nickel

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
10	(10)	Cuba	tonnes	45,000	1.60	89.15	2.56
13	(13)	South Africa	tonnes	31,846	1.13	93.14	1.28
14	(14)	Papua New Guinea	tonnes	31,594	1.12	94.26	1.26
15	(15)	Dominican Republic	tonnes	27,819	0.99	95.25	0.98
16	(21)	Madagascar	tonnes	27,710	0.99	96.24	0.97
17	(17)	Côte d'Ivoire	tonnes	22,500	0.80	97.04	0.64
20	(20)	Zimbabwe	tonnes	16,213	0.58	98.91	0.33
25	(25)	Zambia	tonnes	3,680	0.13	99.96	0.02
		Total OACPS		**206,362**	**7.34**		
		ROW			**92.66**		
		Total (WORLD)	**tonnes**	**2,812,251**	**100.00**		**2,110**

Source: World Mining Data, 2024.

TABLE D5. Tantalum

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	DRC.	tonnes	505	28.69	28.69	823.30
3	(3)	Rwanda	tonnes	245	13.92	62.50	193.78
5	(6)	Nigeria	tonnes	160	9.09	81.82	82.64
6	(5)	Mozambique	tonnes	75	4.26	86.08	18.16
8	(9)	Ethiopia	tonnes	64	3.64	93.69	13.22
10	(10)	Sierra Leone	tonnes	36	2.05	97.95	4.18
12	(13)	Burundi	tonnes	15	0.85	99.89	0.73
		Total OACPS		**1,100**	**62.50**		
		ROW			**37.50**		
		Total (WORLD)	**tonnes**	**1,760**	**100.00**		**1,658**

Source: World Mining Data, 2024.

TABLE D6. Titanium

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
2	(3)	Mozambique	tonnes	1,126,800	13.27	46.90	176.01
3	(2)	South Africa	tonnes	900,000	10.60	57.50	112.29
7	(8)	Madagascar	tonnes	324,800	3.82	79.61	14.62
8	(7)	Senegal	tonnes	31,0310	3.65	83.26	13.35
10	(9)	Kenya	tonnes	254,210	2.99	89.74	8.96
13	(14)	Sierra Leone	tonnes	135,400	1.59	95.49	2.54
		Total OACPS		**3,051,520**	**35.93**		
		ROW			**64.07**		
		Total (WORLD)	**tonnes**	**8,493,291**	**100.00**		**1,598**

Source: World Mining Data, 2024.

TABLE D7. Tungsten

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
5	(5)	Rwanda	tonnes	1,545	1.75	96.46	3.05
11	(11)	Burundi	tonnes	120	0.14	99.49	0.02
13	(12)	DRC	tonnes	114	0.13	99.76	0.02
18	(20)	Nigeria	tonnes	24	0.03	99.98	0.00
19	(**)	Uganda	tonnes	11	0.01	99.99	0.00
20	(18)	Zimbabwe	tonnes	8	0.01	100.00	0.00
		Total OACPS		**1822**	**2.1**		
		ROW			**97.94**		
		Total (WORLD)	**tonnes**	**88,537**	**100.00**		**6,203**

Source: World Mining Data, 2024.

TABLE D8. Vanadium

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	China	tonnes	63,800	63.82	63.82	4,072.96
2	(2)	Russia	tonnes	20,058	20.06	83.88	402.57
3	(3)	South Africa	tonnes	8,799	8.80	92.69	77.47
4	(4)	Brazil	tonnes	7,212	7.21	99.90	52.05
5	(5)	India	tonnes	100	0.10	100.00	0.01
		ROW			**91.20**		
		Total (WORLD)	**tonnes**	**99,969**	**100.00**		**4,605**

Source: World Mining Data, 2024.

TABLE D9. X Bauxite

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
2	(2)	Guinea	tonnes	87,438,557	23.02	50.21	529.88
8	(7)	Jamaica	tonnes	5,949,600	1.57	93.68	2.45
13	(14)	Sierra Leone	tonnes	1,396,678	0.37	98.45	0.14
16	(15)	Ghana	tonnes	839,465	0.22	99.23	0.05
17	(22)	Côte d'Ivoire	tonnes	700,000	0.18	99.41	0.03

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
19	(20)	Guyana	tonnes	618,552	0.16	99.75	0.03
23	(28)	Dominican Republic	tonnes	80,058	0.02	99.97	0.00
27	(29)	Mozambique	tonnes	7,852	0.00	100.00	0.00
29	(30)	Tanzania	tonnes	38	0.00	100.00	0.00
		Total OACPS		**97,030,800**	**25.54**		
		ROW			**74.46**		
		Total (WORLD)	**tonnes**	**379,850,872**	**100.00**		**1,775**

Source: World Mining Data, 2024.

TABLE D10. Copper

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
3	(4)	DRC	tonnes	1,924,374	8.99	45.99	80.75
7	(7)	Zambia	tonnes	827,107	3.86	68.83	14.92
28	(26)	Papua New Guinea	tonnes	66,531	0.31	97.82	0.10
35	(35)	South Africa	tonnes	28,307	0.13	99.10	0.02
37	(38)	Eritrea	tonnes	20,224	0.09	99.32	0.01

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
38	(36)	Mauritania	tonnes	18,846	0.09	99.41	0.01
40	(**)	Botswana	tonnes	11,742	0.05	99.55	0.00
41	(41)	Tanzania	tonnes	11,520	0.05	99.61	0.00
42	(42)	Republic of the Congo	tonnes	10,300	0.05	99.65	0.00
45	(46)	Zimbabwe	tonnes	8,650	0.04	99.78	0.00
50	(52)	Dominican Republic	tonnes	4,774	0.02	99.94	0.00
55	(39)	Namibia	tonnes	950	0.00	100.00	0.00
		Total OACPS		**2,933,325**	**13.70**		
		ROW			**86.30**		
		Total (WORLD)	**tonnes**	**21,415,370**	**100.00**		**1,097**

Source: World Mining Data, 2024.

TABLE D11. Lithium

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	Australia	tonnes	113,600	48.85	48.85	2,386.70
2	(2)	Chile	tonnes	65,060	27.98	76.83	782.83
3	(3)	China	tonnes	30,500	13.12	89.95	172.04
4	(4)	Argentina	tonnes	12,870	5.53	95.48	30.63
5	(5)	Brazil	tonnes	5,670	2.44	97.92	5.95
6	(6)	United States	tonnes	2,505	1.08	99.00	1.16
7	(7)	Zimbabwe	tonnes	1,670	0.72	99.72	0.52
8	(9)	Bolivia	tonnes	410	0.18	99.89	0.03
9	(8)	Portugal	tonnes	225	0.10	99.99	0.01
10	(**)	Nigeria	tonnes	20	0.01	100.00	0.00
		Total	**tonnes**	**232,530**	**100.00**		**3,380**

Source: World Mining Data, 2024.

TABLE D12. REEs

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	China	tonnes	168,000	62.41	62.41	3,894.56
2	(2)	United States	tonnes	42,413	15.76	78.16	248.22
3	(3)	Myanmar	tonnes	27,100	10.07	88.23	101.34
4	(4)	Australia	tonnes	21,970	8.16	96.39	66.60
5	(5)	Madagascar	tonnes	4,100	1.52	97.91	2.32
6	(7)	India	tonnes	2,600	0.97	98.88	0.93
7	(6)	Russia	tonnes	2,276	0.85	99.72	0.71
8	(8)	Brazil	tonnes	580	0.22	99.94	0.05
9	(9)	Burundi	tonnes	134	0.05	99.99	0.00
10	10)	Malaysia	tonnes	30	0.01	100.00	0.00
		Total	**tonnes**	**269,203**	**100.00**		**4,315**

Source: World Mining Data, 2024.

TABLE D13. Tin

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
6	(7)	DRC	tonnes	15,750	5.81	81.82	33.77
9	(10)	Nigeria	tonnes	6,890	2.54	93.33	6.46
13	(13)	Rwanda	tonnes	2,260	0.83	98.78	0.70
16	(15)	Namibia	tonnes	492	0.18	99.71	0.03
19	(20)	Tanzania	tonnes	158	0.06	99.94	0.00
20	(17)	Burundi	tonnes	95	0.04	99.97	0.00
		Total OACPS		25,645	9.46		
		ROW			**90.54**		
		Total (WORLD)	**tonnes**	**271,033**	**100.00**		**1,690**

Source: World Mining Data, 2024.

TABLE D14. Palladium

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(2)	South Africa	kg	84,336	39.67	39.67	1,573.77
5	(5)	Zimbabwe	kg	12,619	5.94	98.58	35.23
		Total OACPS		**96,955**	**45.61**		
		ROW			**54.39**		
		Total (WORLD)	**kg**	**212,590**	**100.00**		**3250**

Source: World Mining Data, 2024.

TABLE D15. Platinum

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	South Africa	kg	141,626	74.20	74.20	5,505.96
3	(3)	Zimbabwe	kg	14,732	7.72	92.32	59.58
		Total OACPS		**156,358**	**81.92**		
		ROW			**18.08**		
		Total (WORLD)	**kg**	**190,865**	**100.00**		**5,690**

Source: World Mining Data, 2024.

TABLE D16. Rhodium

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
1	(1)	South Africa	kg	20,875	85.28	85.28	7,272.20
3	(3)	Zimbabwe	kg	1,334	5.45	97.47	29.70
		Total OACPS		**22,209**	**90.73**		
		ROW			**9.27**		
		Total (WORLD)	**kg**	**24,479**	**100.00**		**7,352**

Source: World Mining Data, 2024.

TABLE D17. Graphite

Rank 2021	Rank 2020	OACPS country	Unit	Production 2021	Share in %	Share cum.%	Concentration share HHI
2	(3)	Madagascar	tonnes	88,110	7.55	70.51	56.96
4	(6)	Mozambique	tonnes	77,116	6.61	83.84	43.63
		Total OACPS		**165,226**	**14.15**		
		ROW			**85.85**		
		Total (WORLD)	**tonnes**	**1,167,430**	**100.00**		**4,154**

Source: World Mining Data, 2024.

Appendix E. HS Codes Used for this Study

Data used in this report covers the period from 2019 to 2021, and all values are expressed in USD thousand. The report includes only the Organisation of African, Caribbean, and Pacific States members that have reported information to the International Trade Centre or COMTRADE.

Bauxite

HS 2606: Aluminum ores and concentrates

Cobalt

HS 2605: Cobalt ores and concentrates

HS 2822: Cobalt oxides and hydroxides

HS 8105: Cobalt mattes and other intermediary products

Copper

HS 2603: Ores and concentrates

HS 7401: Mattes

HS 7402: Unrefined

HS 7403: Refined

Graphite (natural)

HS 250410: Natural in powder or in flakes

Other: HS 250490

Lithium

HS282520: Lithium oxide

HS 283691: Lithium carbonate

Manganese

HS 2602: Ores and concentrates

HS 2820: Manganese oxides

HS 720211: Ferromanganese, containing > 2% carbon

HS 720219: Ferromanganese, other

HS 720230: Ferro-silico-manganese

HS 8111: Articles thereof

Nickel

HS 2604: Nickel ores and concentrates

HS 75: Articles thereof

Platinum Group of Metals (PGMs)

Platinum

HS 711011: Unwrought

HS 711019: Semi manufactures

Palladium

HS 711021: Unwrought

HS 711029: Semi-manufactured

Rhodium

HS 711031: Unwrought

HS 711039: Semi-manufactured

HS 280530: Rare-earth elements

HS810320: Tantalum, unwrought

HS 260900: Tin, ores, and concentrates

HS 261400: Titanium, ores, and concentrates

HS 261100: Tungsten, ores, and concentrates:

Appendix F. Copper Beneficiation (Value) Chain (For Sulphides Ores Using Pyrometallurgy Process)

PRODUCTION PROCESS	TYPES OF PRODUCTS OBTAINED	HS CODE EQUIVALENT
	BENEFICIATION	**UPSTREAM**
Step 1 Extraction of copper-bearing ores	Copper-bearing ores and co/ by product	26.03 copper ores and concentrates
Step 2 Communition	Fine ores	26.03 copper ores and concentrates
Step 3 Froth floatation	Copper concentrate (around 30% of copper on average)	26.03 copper ores and concentrates
		MIDSTREAM
Step 4 Smelting process	Copper concentrate transformed into "matte," of 50%–70% copper content	74.01 Copper mattes; cement copper (precipitated copper)
Step 5 Molten matte processed in converter	Blister of copper of 98.5%–99.5% copper content	74.02 Unrefined copper; copper anodes for electrolytic refining
Step 6 Refining	Copper cathodes of 99.99% copper content	74.03 Refined copper and copper alloys, unwroughts (cathodes, wire-bars, billets)
	FABRICATION	**DOWNSTREAM**
Semis fabrication	Semi-finished copper and copper alloy production	74.07–74.19, Copper bars, rods, profiles, wire, plates, sheets, foil, tubes, pipes, etc.

Source: Author.

Note: In the case of oxide ores, the production process is different. After Step 2 (the communition stage), processing is done through hydrometallurgy, which then leads to a process involving acid leaching (often heap leach) followed by solvent extraction and electrowinning. The product obtained is copper cathode, that is obtained at Step 6 in a pyrometallurgy process used for sulfide ores.

Appendix G. Summary of Measures Disciplined or Prohibited Under the Rules of the World Trade Organization (WTO)

Measures	Relevant WTO rules	Compatibility with WTO rules	Examples of countries potentially affected
Performance requirements			
Quota related to local sourcing: Products	Art. XI.1 Agreement in Trade-Related Investment Measures (TRIMs) illustrative list para. 1 (a).	Prohibited	Product list: Ghana, United States Targets (volume or value): European Union (EU), United States, China, South Africa
Trade balancing requirements	Art. XI.1 TRIMs illustrative list 1 (b) for internal measures; 2 (a) for border measures	Prohibited	Most local content requirements with targets on procurement could fit into in this category.
Manufacturing requirements	TRIMs illustrative list	Prohibited	Inflation Reduction Act (IRA), Critical Raw Materials Act (CRMA), Mining Charter in South Africa
Licensing requirements	General Agreement on Tariffs and Trade (GATT) 1994 Art. XI.1 (imports only)	Disciplined Prohibited if non-automatic	All countries (See: Annex E)
Foreign exchange balancing	GATT 1994 Article XI.1 TRIMs illustrative list, para 2 (b)	Prohibited Exception for developing countries GATT Art XII and X VIII:B	

Measures	Relevant WTO rules	Compatibility with WTO rules	Examples of countries potentially affected
Ownership requirements			
Local equity participation	General Agreement on Trade in Services (GATS) Art. XVI. 2(e – f)	Prohibited for service categories scheduled without restrictions, otherwise not disciplined	State participation: Tanzania, Ghana Equity participation (non-state): Ghana Max. foreign ownership: Joint Venture: DRC Examples for illustration only. None of the countries mentioned has scheduled any commitments in mineral-related sectors
Export restrictions			
Minimum export requirements	GATT 1994 Art. III.5; GATT 1994 Art. XI.1; TRIMs Illustrative List, para. 2(a)	Prohibited	All countries with export bans or beneficiation requirements
Domestic sales requirements	GATT 1994 Art. III.5; GATT 1994 Art. XI: 1; TRIMs illustrative list 2(c)	Prohibited	U.S. requirements for steel, EU minimum requirements under CRMA; Democratic Republic of the Congo (DRC) for artisanally mined cobalt
Market reserve policy	GATT 1994 Art. III.4	Prohibited	Production sharing agreements: The DRC, Gabon, Senegal, Tanzania State-owned enterprises reserving proceeds for domestic use: Artisanal cobalt mining in DRC Offset agreements: Zambia, DRC

Measures	Relevant WTO rules	Compatibility with WTO rules	Examples of countries potentially affected
Horizontal measures			
State trading enterprises	Article XVII of GATT 1994, applicable when state trading enterprises enter into commercial operations.	Disciplined: must operate in accordance with principles of non-discrimination	Most resource-rich countries
Subsidies to support local suppliers	Agreement on Subsidies on Countervailing Measures Art. 3.1(b)	Actionable if specific, otherwise non-actionable	IRA, CRMA On inputs: Nigeria

Exceptions for developing countries: Developing countries are permitted to retain TRIMs that constitute a violation of GATT 1994 Article III or XI, provided the measures meet the conditions of GATT 1994 Article XVIII, which allows specified derogation from the GATT 1994 provisions for the economic development needs of developing countries.

Note: This list is non-exhaustive

Source: Author's compilation.

Appendix H. Overview of Trade Rules Applicable Between the European Union and Organisation of African, Caribbean, and Pacific States Countries

TABLE H1. Application trade regimes

Trade regime	Countries	Market access conditions
Africa		
Economic Partnership Agreements (EPAs) in Africa (a total of 15 countries)	East African region: East African Community (EAC)–European Union (EU) EPA: Kenya (European Commission [EC], 2023a)	Access to European Union (EU): Duty free and quota free (DFQF) (except for arms) Access to East Africa: 82.6% imports from EU by value over 25 years.
	Central Africa: Cameroon	Access to EU: DFQF (except for arms) Access to Cameroon: 80% imports from EU by value to be liberalized over 15 years.
	West Africa: **Ghana (EC, 2016a) and Côte d'Ivoire (EC, 2009b)**	Access to EU: DFQF (except for arms) **Ghana**: 80% imports from EU and **Côte d'Ivoire** 81% imports from EU to be liberalized over 15 years.
	Eastern and Southern Africa (EC, 2012): Comoros, Mauritius, **Madagascar**, Seychelles, **Zimbabwe**	Access to EU: DFQF (except arms) By 2022, Comoros, **Madagascar**, and **Zimbabwe** will liberalize around 80% of their trade, while Mauritius and Seychelles will liberalize 96 and 98%, respectively.

Trade regime	Countries	Market access conditions
	Southern African Development Community (EC, 2016a): **Botswana**, Eswatini, Lesotho, **Mozambique**, **Namibia**, **South Africa**	Except **South Africa** (96% DFQF + 2.7% preferential access) – Access to EU: DFQF (except for arms) For EU: **Botswana**, Eswatini, Lesotho, **Namibia**: liberalize 84.9% of products; an additional 12.9% receive preferential access. The rest is excluded. **Mozambique**: lower liberalization rate (81%)
Everything But Arms	All LDCs (31 countries), (EU, 2012) Includes **Burundi**, **Democratic Republic of the Congo (DRC)**, **Rwanda**, **Senegal**, **Tanzania**, **Zambia**	Access to EU: DFQF (except for arms) LDCs do not have any obligations, EU trades on most-favoured nation (MFN) basis.
Generalised System of Preferences	Includes: **Nigeria, Gabon** (EU, 2012)	Access to EU: Less preferential, lower tariffs for 66% of products EU trades on an MFN basis.
EPAs in the Caribbean Region		
EU–CARIFORUM EPA [14 countries]	Antigua & Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Rep, Grenada, Guyana, Haiti**, **Jamaica**, Saint Lucia, Saint Vincent & the Grenadines, Saint Kitts & Nevis, Suriname, Trinidad & Tobago (EC, 2007)	Access to EU: 100% DFQF access Access to Caribbean countries: Gradual duty phase out over 15–25 years. 17% of products and services are considered sensitive and excluded from liberalization. Special provisions apply on import of milk powder to the Dominican Republic (there are import quotas with preferential customs duties).
	Cuba	

Trade regime	Countries	Market access conditions
EPAs in the Pacific Region		
EU–Pacific EPA	Includes Fiji, **Papua New Guinea (PNG)**, Samoa, Solomon Islands (EC, 2009a)	Access to EU: 100% DFQF access. Access to Pacific countries: PNG: liberalized 88% of EU imports [with immediate effect] Fiji liberalized 87% of EU imports over 15 years. Samoa liberalized 80% of EU imports over 20 years. Solomon Islands liberalized 83% of EU imports over 15 years.

Countries in ***bold*** *are also producers of critical and strategic raw materials.*

***Haiti signed the agreement in December 2009 but is not applying it yet, pending ratification by its parliament.*

Source: Author's compilation.

TABLE H2. Standstill provisions in EPAs (with region including countries producing critical raw materials [CRMs])

Agreement	Summary of Standstill provisions in the IEPA
EU–Southern African Development Community (SADC) (EC, 2016c)	No specific standstill clause. However Article 23.2 on customs duties states that "for all products subject to liberalisation, no new customs duties shall be introduced, nor shall those already applied be increased in trade between the Parties as from the entry into force of this Agreement, with the exception of: (a) paragraph 7; (b) paragraph 9; (c) paragraph 7 of Section A of PART 1 of ANNEX I; and (d) paragraph 8 of Section A of PART 1 of ANNEX II."
EU–Eastern and Southern Africa (ESA) Article 14: Standstill (EC, 2012)	Subject to Article 12, the parties agree not to increase their applied customs duties on products imported from the other party.
EU–East African Community Article 12: Standstill (EC, 2014)	The parties agree not to increase their applied customs duties for products subject to liberalization under this agreement, with the exception of measures adopted according to Articles 48, 49, and 50.2. In order to preserve the prospect for the wider African regional integration processes, the parties may decide in the EPA Council to modify the level of customs duties stipulated in Annexes II(a), II(b) and II(c), which may be applied to a product originating in the EU upon its importation into the EAC partner states. The parties shall ensure that any such modification does not result in an incompatibility of this agreement with the requirements of Article XXIV of GATT 1994.
EU Initialled Agreement with Economic Commission for West African States (ECOWAS) Article 9 Status quo (EC, 2016b)	No new customs duties on imports shall be introduced on products covered by the liberalization between the parties, nor shall those currently applied be increased from the date of entry into force of this agreement. There is an exception for the finalization of the ECOWAS Common External Tariff (CET).
EU–Stepping Stone Agreement with Côte d'Ivoire Article 15 Standstill (EC, 2009b)	No new customs duties on imports shall be introduced in trade between the parties, nor shall those currently applied in trade between the parties be increased from the date of entry into force of this agreement. There is an exception for the finalization of the ECOWAS CET.
EU–Stepping Stone Agreement with Ghana Article 15 Standstill (EC, 2016a)	Notwithstanding Articles 23 and 24, no new customs duty on imports shall be introduced on trade between the parties and those currently applied on trade between the parties shall not be increased as from the date of entry into force of this agreement. There is an exception for the finalization of the ECOWAS CET.

Agreement	Summary of Standstill provisions in the IEPA
EU–CARIFORM Economic Partnership Agreements	No standstill clause in trade in goods.
EU–Pacific EPA Article 14 Standstill (EC, 2009a)	No new customs duties shall be introduced in trade, nor shall those already applied be increased between the parties as from the entry into force of the agreement for all products subject to liberalizing commitments.

Source: Author's compilation.

TABLE H3. Summary of provisions on export taxes in (interim) EPAs between the EU and Organisation of African, Caribbean, and Pacific States (OACPS) CRM-producing countries

Agreement	Summary of existing provisions in the Interim EPA regarding export restrictions
EU–SADC) EPA Article 26 (EC, 2016a)	1. No new duties can be introduced 2. Carve out for: • existing export duties • In exceptional circumstances for: ° Revenue needs; to protect infant industry; for environment—not applicable to South Africa. ° Industrial development needs—only for a total of eight products (in HS 6) after notification, for a maximum of 12 years, extendable in agreement with the EU. For the first 6 years from the date of introduction of an export tax or duty, the equivalent of the average annual exports (of 3 years before the tax). From the 7th year, exports to the EU on an annual amount equal to 50% of the average volume of exports to the EU (calculated over 3 years preceding the measure). ° Export duties or taxes shall not exceed 10% of the ad valorem export value of the product. • Article to be reviewed after 3 years. • If more favourable treatment is given to major trading partner, it shall be extended to the EU.
EU–Eastern and Southern Africa (ESA) EPA Article 15 (EC, 2012)	1. No new duties can be introduced. 2. Carve out for duties in Annex III (only Zambia is listed—not an EPA signatory). 3. EPA Committee may examine requests to review goods in Annex III.

Agreement	Summary of existing provisions in the Interim EPA regarding export restrictions
EU–East African Community EPA Article 14 (EC, 2014)	1. No new duties to be introduced. 2. After notification, carve out for exceptional circumstances (development of domestic industry; maintain currency stability; protect revenue, food security and environment). 3. If more favourable treatment is given to major trading partner, it shall be extended to EU.
EU–Côte d'Ivoire and EU–Ghana EPAs Article 13 (EC, 2009b, 2016c)	1. No new duties to be introduced. 2. Carve out for currently applied duties and in exceptional circumstances (specific needs for income, promotion for fledgling industry or environmental protection).
EU–CARIFORUM EPA Article 14 (EC, 2007)	1. No new duties to be introduced. 2. Export duties in Annex I to be eliminated with 3 years of signature of this agreement (done).
EU–Pacific States EPA Article 10 (EC, 2009a)	1. Export duties to be eliminated and no new duties to be imposed. 2. After mutual agreement, temporary carve out for exceptional circumstances (specific protection to develop infant industries on limited products).

Source: Author's compilation.

TABLE H4. Quantitative restriction (QR) provisions in EPAs

Agreement	Summary of existing provisions in the EPA on QRs
EU–SADC EPA Article 39 (EC, 2016a)	QRs to be eliminated, no new measures to be introduced
EU–Eastern and Southern Africa EPA Article 17 (EC, 2012)	1. QRs to be eliminated, no new measures to be introduced (includes measures made effective through quotas, import or export licences or other measures) 2. Carve out for QRs in Annex I and II
EU–EAC EPA Article 19 (EC, 2014)	1. QRs to be eliminated, no new measures to be introduced 2. Carve out in case critical shortages of foodstuffs or other essential products

Agreement	Summary of existing provisions in the EPA on QRs
EU–Côte d'Ivoire and EU–Ghana EPAs Article 34 (EC, 2009b, 2016c)	1. QRs to be eliminated, irrespective of whether they are implemented through quotas, import or export licensing or other measures. 2. No new measures to be introduced
EU–CARIFORUM EPA Article 26 (EC, 2007)	QRs to be eliminated, no new measures to be introduced
EU–Pacific States EPA (EC, 2009a)	QRs to be eliminated, no new measures to be introduced

Source: Author's compilation.

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