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Cobalt Trade and the Global Governance of Strategic Resources: The Case of the Democratic Republic of the Congo

Prof. Domenico Pauciulo

Thesis Supervisor

Prof. Thomas Christiansen

Thesis Co-Supervisor

Carmela SCARFATO

Matr. 782961

Candidate

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LIST OF ABBREVIATION

AfCFTA	African Continental Free Trade Area
AMV	African Mining Vision
AU	African Union
CRMA	Critical Raw Materials Alliance
DRC	Democratic Republic of the Congo
e.g.	*exempli gratia* (or "example given")
EITI	Extractive Industries Transparency Initiative
ESG	Environmental, Social and Governance
etc.	*et cetera*
EU	European Union
FPIC	Free, Prior and Informed Consent
GATT	General Agreement on Tariffs and Trade
GDP.	Gross Domestic Product
ILO	International Labour Organization
IMF	International Monetary Fund
IRA	Inflation Reduction Act
MoU	Memorandum of Understanding
NAFTA	North American Free Trade Agreement
OECD	Organisation for Economic Co-operation and Development
OAU	Organization of African Unity
PVC	Polyvinyl Chloride
RECs	Regional Economic Communities
SMET	Securing Minerals for the Energy Transition
SPAs	Strategic Partnership Agreements
UN	United Nations
UNSC	United Nations Security Council

US	United States
USGS	United States Geological Survey
VMA	Vision Minière Africaine
WTO	World Trade Organization
WWF	World Wide Fund for Nature

INTRODUCTION

The objective of this thesis is to analyse the different and controversial ways in which mineral resources are managed on the African continent, focusing in particular on cobalt and analysing the various specific features of the current multi-level regulation, from national laws to the various forms of global regulation.

With this objective in mind, the paper analyses in particular the role of the African Union, the African Continental Free Trade Area (AfCFTA) and the General Agreement on Tariffs and Trade (GATT) in developing rules and active policies to promote trade in raw materials that can be considered genuinely sustainable at both a human and ecological level. Particular attention is paid to the circumstances surrounding the case of the Democratic Republic of Congo, highlighting the serious challenges and critical issues affecting human rights, regulatory transparency and rigour in the application of international certification of mineral production.

To this end, the first part of the thesis focuses on the specific characteristics of mineral resource extraction in Africa, analysing it in the context of regional norms and global regulations, with particular regard to the role of the African Union, the AfCFTA and the GATT. It therefore explores the importance and critical nature of mineral resource management according to the principles of multilevel regulation, highlighting the peculiarities of national regulation and regional integration that underpin the action of the African Union and the African Mining Vision. The main mechanisms underlying the functioning of the inter-African mineral market and the objectives pursued by the AfCFTA in the field of natural resources are then illustrated, recalling the role of Member States in the search for ever greater regulatory harmonisation. A specific focus is then given to regional regulation and global trade trends, with regard to GATT rules applicable to raw materials.

The second part then illustrates in particular the specificities of cobalt extraction and marketing and its regulation at international and local level. It begins by illustrating the qualities of critical raw materials, multilateral trading systems and the World Trade Organization (WTO)

regulations that apply to them, clarifying in particular the specific characteristics of cobalt, its extraction and the serious human rights issues involved. The rules of the Memorandum of Understanding (MoU) or Strategic Partnership Agreements (SPAs) are then explained, along with the issues that characterise trade agreements in terms of transparency, lack of participation by developing countries, absence of binding obligations, and the imposition of Environmental, Social and Governance (ESG) standards without negotiation and multilateral cooperation.

The third part then looks at the case of the Democratic Republic of Congo as the world's main supplier of cobalt, within the national regulatory framework and international initiatives for a responsible supply chain. It begins with a description of cobalt reserves in the DRC, their importance in the global market and the uses of cobalt, as well as the various actors involved in its extraction, from multinational operators to various government agencies, offering an analysis of the international treaties and regulations governing cobalt exports from the DRC. This section takes a closer look at child labour and human rights in cobalt mines, with a particular focus on the Democratic Republic of Congo's obligations under international, regional and national law and the protection of minors. The fourth part deals with the importance of international mineral certification: objectives and application to the case of the Democratic Republic of Congo. It first describes the provisions of the US Dodd-Frank Act and the due diligence obligation for companies, as well as parallel initiatives and regulations of the European Union on critical minerals. The difficulties of applying international regulations at local level and the responsibility of companies and the complicity of local governments are highlighted, with particular regard to the existence of small mines and the difficulty of enforcing rules and regulations, rights and certifications in Congo.

CHAPTER ONE – Mineral resources in Africa between regional norms and global regulation: the roles of the African Union, the AfCFTA and the GATT

SUMMARY: 1.1 The importance and critical nature of mineral resource management according to the principles of multi-level regulation. – 1.2. The action of the African Union and the principle behind the Africa Mining Vision: national regulation and regional integration. – 1.3. The inter-African mining market and the objectives pursued by the AfCFTA about natural resources. – 1.3.1. Member States and the search for ever greater regulatory harmonization. – 1.4 Regional regulation and global trade: GATT rules applicable to raw materials.

This part of the thesis analyses the management of mineral resources in Africa within the framework of regional norms and global trade regulation. It examines the role of the African Union, the African Continental Free Trade Area, and the General Agreement on Tariffs and Trade in shaping policies governing the extraction and trade of mineral resources. The chapter explores the principles of multi-level regulation, focusing on the interaction between national regulation, regional integration, and global trade rules. Particular attention is devoted to the objectives of regulatory harmonization, the functioning of the inter-African mineral market, and the constraints imposed by international trade law on resource governance.

1.1. The importance and critical nature of mineral resource management according to the principles of multi-level regulation

Africa is undergoing a silent but global transformation. For decades, images of gold mines and diamond deposits have dominated the narrative of the continent. Today, however, a new chapter is opening in the book of its riches: that of minerals essential for the energy transition and the sustainable future of the planet. The World Bank report "Leveraging Resource Wealth During the Low Carbon Transition" explores how African countries can address the climate crisis, enhance access to energy, and improve

fiscal sustainability.[1] The key will be a mix of innovative policies, transparent governance, and targeted investments in renewable energy and infrastructure. At stake is not only economic growth, but also the future of millions of people in one of the continent's most vulnerable to climate change. As the world moves away from fossil fuels, Africa is becoming a crucial player thanks to its vast reserves of natural resources. Lithium, cobalt, copper, platinum, manganese, uranium: chemical elements that represent the foundations on which the green technological revolution will be built. Cobalt, for example, is essential for electric vehicle batteries, and 70 percent of the world's trade in this metal comes from the Democratic Republic of Congo. The future of sustainable transport and clean energy storage inevitably lies here.[2]

Among the protagonists of the new era is Zimbabwe, which is establishing itself as one of the world's leading suppliers of lithium. This metal, often referred to as "white gold," is in high demand from industries that manufacture batteries for electric cars and electronic devices. Like many other African countries, Zimbabwe has to contend with inadequate infrastructure, political instability, and governance that struggles to keep pace with the demands of the global market. Despite this, its reserves are a treasure that, if managed with foresight, could revolutionize the country's economy and place it at the heart of the global energy transition.[3]

Guinea and Ghana are also at a crucial crossroads. The former has some of the world's largest reserves of bauxite, a material essential for aluminum production, while the latter is seeking to attract investment to develop its mineral resources[4]. It is not just a question of extraction: how to bring these resources to market is an equally complex challenge. The competition between the Lobito railway corridor in Angola and the

[1] World Bank. (2023). Africa's pulse (No. 27): Leveraging resource wealth during the low carbon transition. World Bank.
[2] Koyamparambath, A., Betz, R., & Calzada, J. (2022). Supply risk evolution of raw materials for batteries and fossil fuels for selected OECD countries (2000–2018). Resources Policy, 75, 102465.
[3] Condliffe, J. B. (2023). The reconstruction of world trade: A survey of international economic relations p.42. Routledge.
[4] Colarizi, A. (2022). Africa rossa: Il modello cinese e il continente del futuro. L'Asino d'Oro Edizioni.

Tazara railway linking Zambia to Tanzania is a concrete example of this. Both routes are vying to become the main arteries for transporting mineral resources, particularly from the copper-rich Copperbelt, to global markets. The Copperbelt itself is a striking example of the African paradox: abundant mineral wealth, but often not fully exploited. Stretching across Zambia and the Democratic Republic of Congo, this region is home to some of the world's largest copper reserves[5]. Mineral exploration is crucial to unlocking the area's potential, but the road ahead is far from smooth. Weak governance, corruption, and political instability continue to pose formidable obstacles. Uranium, an increasingly sought-after resource in a world looking to nuclear energy as a low-emission solution, also has its epicenter in Africa, with Niger and Namibia at the forefront. However, their ability to translate these resources into economic development is severely hampered by security and political stability issues[6]. While some countries struggle to capitalize on their resources, South Africa is fighting a different but equally complex battle: the energy crisis. Frequent power outages and heavy dependence on coal have brought the country's economy to its knees.

Despite promising initiatives such as the Just Energy Transition Partnership, the road to a more diversified energy mix and universal access to energy is still long and winding. According to the International Monetary Fund, ten of the world's fifteen most mineral-intensive economies are located in sub-Saharan Africa. The African continent must commit to diversifying and strengthening its relationships with other global partners, including the United States, in order to protect itself from changing economic dynamics, particularly with regard to China, and ensure sustainable growth.[7] The main challenge for Africa is to transform its natural resources into sustainable wealth. Key priorities include improving infrastructure—railways, ports, and energy networks—to

[5] Sasmal, S. (2024). A stacked deck that keeps getting higher: The relationship between critical raw materials, the WTO and "strategic" partnerships (Briefing Paper No. 79, April 2024).
[6] Colarizi, A. (2022). Africa rossa: Il modello cinese e il continente del futuro. L'Asino d'Oro Edizioni.

[7] Koyamparambath, A., Betz, R., & Calzada, J. (2022). Supply risk evolution of raw materials for batteries and fossil fuels for selected OECD countries (2000–2018). Resources Policy, 75, 102465.

facilitate the transport of resources. This requires collaboration between African governments, the private sector, and international partners. At the same time, the African Continental Free Trade Area (AfCFTA) can foster trade, investment, and economic development by promoting regional integration and inclusive growth[8].

It is also essential to promote transparency in the management of natural resources through mandatory disclosure of contracts, adherence to initiatives such as the Extractive Industries Transparency Initiative (EITI), and the involvement of civil society, so as to ensure the equitable distribution of economic benefits, prevent the concentration of wealth in the hands of a few, and guarantee inclusive and sustainable development. In politically unstable regions, mineral trade can be used to finance armed groups, cause forced labor and other human rights violations, and foster corruption and money laundering.[9]

In 2016, the Organisation for Economic Co-operation and Development (OECD) drew up the Guidance on due diligence in the responsible supply chain of minerals and metals from conflict-affected and high-risk areas,[10] which provides detailed recommendations to help companies respect human rights and avoid contributing, through their economic and commercial practices in the purchase of minerals and metals, to financing, even unintentionally or indirectly, armed conflict and human rights abuses. The Guide is intended for companies operating in the sector or sourcing minerals or metals for their activities that may originate from areas of high risk of conflict; it has a global scope and applies to all supply chains. The concept of

[8] Sasmal, S. (2024). A stacked deck that keeps getting higher: The relationship between critical raw materials, the WTO and "strategic" partnerships (Briefing Paper No. 79, April 2024).
[9] Filho, W. L., Kotter, R., Özuyar, P. G., Abubakar, I. R., Eustachio, J. H. P. P., & Matandirotya, N. R. (2023). Understanding rare earth elements as critical raw materials. Sustainability, 15(3), 1919.
[10] Organisation for Economic Co-operation and Development. (2016, April). OECD guidelines for multinational enterprises. https://mneguidelines.oecd.org/mining.htm

responsible sourcing underlying the OECD Guide is in line with the United Nations Guiding Principles on Business and Human Rights.[11]

Furthermore, in 2016, as part of the implementation of the Guide, the OECD launched a project that defined a methodology and developed a pilot test capable of assessing the extent to which industry programs are aligned with the OECD recommendations, in particular on the adequacy of initiative standards and on monitoring, supervision, and implementation activities: the final report (2018) presents the results of the pilot project administered to five industry programs. In Europe, in response to the transparency demands of citizens and civil society actors, Regulation (EU) 2017/821 of the European Parliament and of the Council of May 17, 2017[12], was adopted, establishing obligations on due diligence in the supply chain for Union importers of tin, tantalum, and tungsten their minerals and gold originating in conflict-affected and high-risk areas.[13]

The regulation establishes a Union system for due diligence, setting out obligations for Union importers for the responsible sourcing of minerals and metals: this process is continuous, proactive, and responsive, and, through compliance with these obligations, economic operators in the sector monitor and manage their commercial activities to ensure respect for human rights and their non-involvement in conflicts or their adverse effects.

As can be seen, one of the few certainties in Africa is its extraordinary natural resources, which include oil, diamonds, and rare earths that are very useful for manufacturing high-tech products such as coltan[14], a mineral found in all our smartphones. Even the uranium used in particular by France to keep its nuclear power

[11] Condliffe, J. B. (2023). The reconstruction of world trade: A survey of international economic relations p.302. Routledge.
[12] Colarizi, A. (2022). Africa rossa: Il modello cinese e il continente del futuro. L'Asino d'Oro Edizioni.

[13] Kowalski, P., & Legendre, C. (2023). Raw materials critical for the green transition: Production, international trade and export restrictions (OECD Trade Policy Papers No. 269). OECD Publishing.
[14] Sasmal, S. (2024). A stacked deck that keeps getting higher: The relationship between critical raw materials, the WTO and "strategic" partnerships (Briefing Paper No. 79, April 2024).

plants running comes from Africa, keeping the former colonies tied to what was once their mother country. Coltan is hidden in our cell phones and game consoles, in our computers, but also in surgical materials, photovoltaic cells, cameras, airbags, and fiber optics. A report by the World Wide Fund for Nature (WWF) highlights that due to the exploitation of coltan in the Kahuzi-Biega National Park and the Okapi Nature Reserve, the elephant population has fallen to almost zero compared to the approximately 3,600 recorded in 1996, and the gorilla population has fallen to 220 from 440 in 1996, with all animals suffering in general[15]. Africa has enormous natural resources, which alone could constitute a great wealth for African nations, benefiting many citizens who work honestly and hard in mines, with diamonds and rare earths, oil and natural gas.[16]

In Congo, a United Nations investigation has shown that corruption means that wealth is in the hands of a very few, leaving workers with very little for their needs. Just think that 80% of everything extracted from underground mineral resources is exported to other continents for further processing. But the wealth of the African land is barely evident in the true sense of the word. More than three-quarters of the world's gold mining takes place on this continent. Less than 30% of the world's diamonds are mined outside this continent. More than half of manganese, chromite, and cobalt ore is mined in Africa. A third of phosphates and radioactive uranium is also mined from within the continent. And North Africa's natural resources are large reserves of hydrocarbons[17].

Huge diamond mines, a thriving mining industry and a market worth millions of dollars every year, but nothing is being done to improve the conditions of the workers. Most of the mining companies operating in Africa are foreign investment funds, from which local governments demand only a small share of the profits, which varies from country

[15] Althaf, S., & Babbitt, C. W. (2021). Disruption risks to material supply chains in the electronics sector. Resources, Conservation and Recycling, 167, 105248.
[16] Koyamparambath, A., Betz, R., & Calzada, J. (2022). Supply risk evolution of raw materials for batteries and fossil fuels for selected OECD countries (2000–2018). Resources Policy, 75, 102465.
[17] Hayes, S. M., & McCullough, E. A. (2018). Critical minerals: A review of elemental trends in comprehensive criticality studies. Resources Policy, 59, 192–199.

to country[18]. Despite national mining codes and United Nations (UN) guidelines for business and human rights, these companies systematically violate their commitments. In addition, government officials turn a blind eye to the behavior of these companies on the ground.[19] As a result, mineral-rich African countries suffer from what is known as the curse of natural resources: lack of agricultural land in Senegal, bald children with respiratory diseases in Zambia, contaminated water wells in South Africa, child labor in the Democratic Republic of Congo, human rights violations in Madagascar, environmental pollution in Nigeria, and financing of armed groups in Rwanda. The list is long and, in many cases, these violations of international treaties occur in African countries with the implicit consent of the new colonizers[20]. Tycoons, traffickers, warlords, and a corrupt elite think that the state is their exclusive property and exploit it without thinking about the consequences, without realizing that in this way everyone loses. This is how natural resources become a curse and lead to misery, conflict, political instability, and the loss of sovereignty over entire areas.[21] The greatest evil in Africa is corruption, and corruption is now endemic on the African continent. Corruption in Africa is very different from that which exists even in the richest countries. According to Transparency International, the Democratic Republic of Congo ranks 170th out of 180 countries in terms of corruption, Libya ranks 173rd and South Sudan ranks 179th, a sign that corruption in Africa is a growing problem.[22]

The enormous wealth derived from the trade in oil, diamonds, and rare earths ends up in the hands of a few already wealthy individuals who do not use it to improve the standard of living of the entire population and workers, but only for their own personal

[18] Althaf, S., & Babbitt, C. W. (2021). Disruption risks to material supply chains in the electronics sector. Resources, Conservation and Recycling, 167, 105248.
[19] Filho, W. L., Kotter, R., Özuyar, P. G., Abubakar, I. R., Eustachio, J. H. P. P., & Matandirotya, N. R. (2023). Understanding rare earth elements as critical raw materials. Sustainability, 15(3), 1919.
[20] Althaf, S., & Babbitt, C. W. (2021). Disruption risks to material supply chains in the electronics sector. Resources, Conservation and Recycling, 167, 105248.
[21] Kowalski, P., & Legendre, C. (2023). Raw materials critical for the green transition: Production, international trade and export restrictions. OECD Publishing.
[22] Condliffe, J. B. (2023). The reconstruction of world trade: A survey of international economic relations p.302. Routledge.

gain. Exploitation, violence, and a life that is at the minimum for any human being are the norm for many, too many workers who, despite working grueling shifts, are not adequately paid. If we look at the Human Development Index compiled and updated by the United Nations, we can see that African countries are almost all at the bottom of the ranking: countries such as Congo, Mali, and South Sudan, despite being rich in all kinds of natural resources, are unable to improve precisely because of high levels of corruption[23]. Another significant problem is that of metal and rare earth mines, where even children work to the limits of endurance, and "the phenomenon of child labor is concentrated mainly in the poorest areas of the planet, as a by-product of poverty," notes UNICEF. In the city of Dakar, the capital of Senegal, alone, there are 8,000 children living as beggars, according to UNICEF, and even more minors working as underpaid laborers in contact with dangerous substances that put their future development and, in some cases, their lives at risk.[24] Eradicating corruption could perhaps improve the lives of these people, and perhaps wealth could be distributed more equitably. Perhaps a more decisive and resolute fight against corruption that truly tackles the root causes and digs deep to get to the real problems could be a solution. Ultimately, Africa's economic future depends on the continent's ability to take its destiny into its own hands.[25]

[23] Hayes, Sarah M., McCullough, Erin A., 2018. Critical minerals: A review of elemental trends in comprehensive criticality studies, Resources Policy, Elsevier, vol. 59(C), pages 192-199.
[24] Kowalski, P. and C. Legendre (2023), "Raw materials critical for the green transition: Production, international trade and export restrictions", OECD Trade Policy Papers, No. 269, OECD Publishing, Paris.
[25] Condliffe, John Bell. The reconstruction of world trade: a survey of international economic relations. Routledge, 2023, p. 206

1.2. The action of the African Union and the principle behind the Africa Mining Vision: national regulation and regional integration

To make the most of the transition metals boom, African leaders must unite and act urgently to ensure that the emerging market for these metals is well regulated, transparent, fair, and equitable. By adopting renewable energy technologies, the world will trade its dependence on one set of natural resources for another. It is estimated that production of minerals such as cobalt, lithium, nickel, and copper will need to increase sixfold to enable the production, transport, storage, and use of electricity generated from cleaner sources such as wind, water, and solar power. The African continent is home to a wide variety of these minerals. Nineteen percent of the world's reserves of metals needed to manufacture a standard battery-powered electric vehicle are found in Africa. The Democratic Republic of Congo alone is estimated to have 60% of the world's cobalt reserves. Zambia is ranked seventh in the world for copper production, Zimbabwe is the sixth largest producer of lithium, while Madagascar and Mozambique have significant graphite deposits. If used wisely, revenues from the extraction of transition minerals could be a springboard for development in African countries[26]. But mineral extraction in Africa is already plagued by corruption, opacity, environmental damage, and human rights violations. Mining often takes place at the expense of the health and livelihoods of local populations.[27] Research indicates that African women and girls are disproportionately affected by mining, as are local communities and workers in artisanal and small-scale mining sectors. Secret agreements affecting entire populations are made between companies and governments, without citizens having any say in decision-making[28]. As a result, revenues from extraction often benefit a

[26] Hayes, S. M., & McCullough, E. A. (2018). Critical minerals: A review of elemental trends in comprehensive criticality studies. Resources Policy, 59, 192–199.
[27] Subasinghe, C. S., et al. (2022). Global distribution, genesis, exploitation, applications, production, and demand of industrial heavy minerals. Arabian Journal of Geosciences, 15(20), 1616.
[28] Liu, H., Li, H., Qi, Y., An, P., Shi, J., & Liu, Y. (2021). Identification of high-risk agents and relationships in nickel, cobalt, and lithium trade based on resource-dependent networks. Resources Policy, 74.

small circle of people and do not translate into improved livelihoods for African populations. Illicit financial flows weigh heavily on country budgets, with huge amounts of capital being captured by political and business elites and leaving the continent in large quantities.[29]

Fierce competition, demand, and the pursuit of profit in the rush for transition minerals will increase pressure on African producing countries to accelerate licensing and open up mining in sensitive and high-risk areas. This leaves the process open to corruption and exacerbates human rights and environmental violations, particularly water and land pollution and contamination, which seriously affect the health of workers and surrounding populations.[30] Africa also faces the challenge of seeing most of its essential minerals leave the continent for processing elsewhere, as African countries often lack the technical knowledge to secure the entire supply chain. Furthermore, mining companies do not always invest in local staff and assets, depriving African countries of part of their resources. Transition mineral extraction marred by poor governance, corruption, overconsumption, and little regard for people and the environment will only repeat the exploitation and injustices of the past and expose the African continent to increased risk of poverty and instability, as well as increased human rights violations and environmental damage[31].

African leaders must unite and act urgently to ensure that the emerging market for transition minerals is well regulated, transparent, fair, and equitable. This requires an urgent coordinated effort to transform the way minerals are extracted, processed, and

[29] Filho, W. L., Kotter, R., Özuyar, P. G., Abubakar, I. R., Eustachio, J. H. P. P., & Matandirotya, N. R. (2023). Understanding rare earth elements as critical raw materials. Sustainability, 15(3), 1919.
[30] Iyiola, A. O., et al. (2023). An overview of environmental resources in Africa: Emerging issues and sustainable exploitation. In Sustainable utilization and conservation of Africa's biological resources and environment (pp. 543–570).
[31] Liu, H., Li, H., Qi, Y., An, P., Shi, J., & Liu, Y. (2021). Identification of high-risk agents and relationships in nickel, cobalt, and lithium trade based on resource-dependent networks. Resources Policy, 74.

consumed, placing African people—and local communities in particular—at the center of all decisions that affect them.

To ensure responsible extraction, supply, and processing of transition minerals that contribute to a successful energy transition in Africa, governments, companies, international institutions, and investors should consider basing all decisions related to extraction on a comprehensive assessment of the real costs and benefits of mineral extraction and processing.[32] This approach is not limited to revenues, but also aims to assess the impacts on people, the environment, biodiversity, and the climate through objective and comprehensive social and economic studies and investigations, including direct and inclusive consultations with affected people and communities on the ground.[33]

The obligation to obtain the free, prior, and informed consent of indigenous peoples must be seen as a priority and respected, in accordance with the United Nations Declaration on the Rights of Indigenous Peoples. Their right to give or withhold consent must be guaranteed at all stages of extraction[34].

The ONU report Resourcing the Energy Transition: principles to guide critical energy transition minerals towards equity and justice, is a handbook providing principles and guidelines that urges governments and industries to prevent any human rights violations, ensure a fair distribution of profits to extracting countries, and promote practices with limited environmental impact.[35]

[32] Subasinghe, C. S., et al. (2022). Global distribution, genesis, exploitation, applications, production, and demand of industrial heavy minerals. Arabian Journal of Geosciences, 15(20), 1616.
[33] Baldassarre, B., & Carrara, S. (2025). Critical raw materials, circular economy, sustainable development: EU policy reflections for future research and innovation. Resources, Conservation and Recycling, 215, 108060.
[34] World Trade Organization. (2022). Indonesia – Measures relating to raw materials: Report of the Panel (WT/DS592/R & Add.1).
[35] United Nations Secretary-General's Panel on Critical Energy Transition Minerals. (2024, September 11). Resourcing the energy transition: Principles to guide critical energy transition minerals towards equity and justice. United Nations.

Companies should extract minerals only in accordance with the highest international human rights and environmental standards, through due diligence that is transparent and gender-responsive; regulate and monitor the artisanal and small-scale mining sector to protect workers from human rights violations and combat corruption. Ensure effective and independent oversight of grievance mechanisms and mitigation and remediation measures put in place by companies. Support a global moratorium on deep-sea mining until adequate scientific research is conducted to understand the impacts on deep-sea biodiversity, and ensure that international decision-making, including by the International Seabed Authority, is transparent, accountable, inclusive, and participatory.[36]

Companies should develop and prioritize mining approaches that minimize social, environmental, and climate impacts. This requires cooperation to design circular solutions and technologies that reduce overall consumption of transition minerals, promote material reuse, and reduce the sector's carbon footprint.[37] Comprehensive disclosure of contracts and licenses (including annexes), payments to governments should be adopted at the project level by mining companies and commodity traders, and information on beneficial ownership, as well as transparency in the procurement of goods and services.[38] Companies should identify and explicitly mitigate corruption risks in all activities and operations, paying particular attention to high-risk processes such as licensing, permitting and authorization, public procurement, the sale and trade of raw materials, and state-owned enterprises. The OECD Due Diligence Guidance for Responsible Supply Chains of Minerals, the Responsible Mining Integrity Tool and

[36] Kowalski, P., & Legendre, C. (2023). Raw materials critical for the green transition: Production, international trade and export restrictions (OECD Trade Policy Papers No. 269). OECD Publishing.
[37] Liu, H., Li, H., Qi, Y., An, P., Shi, J., & Liu, Y. (2021). Identification of high-risk agents and relationships in nickel, cobalt, and lithium trade based on resource-dependent networks. Resources Policy, 74.
[38] World Trade Organization. (2022). Indonesia – Measures relating to raw materials: Report of the Panel (WT/DS592/R & Add.1).

Transparency International's Mining Price Corruption Risk Assessment Tool are starting points for initiating this work.[39]

Companies should implement the principle of due diligence in integrity, including criteria for fit and proper persons, for all participants in the mineral supply chain. Systematically publish Environmental and Social Impact Assessment reports and ensure that they are effectively used as a tool for decision-making on how and where to operate.[40]

Legal frameworks should be implemented to protect the rights of activists, whistleblowers, human rights and land defenders, journalists, and independent media, and dismantle laws and policies that impede civil society and media freedom. Extractors should prevent political and business elites from capturing transition minerals for their own profit. This practice reduces benefits for citizens, deepens and perpetuates inequalities, and increases the costs of transition minerals. Extractors should implement transparent and equitable revenue and tax management, including revenue volatility planning; ensure the creation of specific funds dedicated to mining revenues, allowing for better monitoring and traceability of these funds; allocate revenues to sustainable development projects that promote a just transition and economic diversification, and ensure that frontline communities, particularly women, benefit from mining.[41]

Extractors should ensure that transition minerals are the driver of a just energy transition for all countries, not just developed countries. This includes ensuring global support and investment to enable producing countries to develop stronger economies

[39] Baldassarre, B., & Carrara, S. (2025). Critical raw materials, circular economy, sustainable development: EU policy reflections for future research and innovation. Resources, Conservation and Recycling, 215, 108060.
[40] World Trade Organization. (2022). Indonesia – Measures relating to raw materials: Report of the Panel (WT/DS592/R & Add.1).
[41] Colomban, P., Kırmızı, B., & Simsek Franci, G. (2021). Cobalt and associated impurities in blue (and green) glass, glaze and enamel: Relationships between raw materials, processing, composition, phases and international trade. Minerals, 11(6), 633.

and create jobs, for example through in-country processing of transition minerals and local sourcing. Extractors should prioritize policies and investments to reduce consumption, including by increasing funding and resources for public transportation, energy efficiency, and other demand reduction initiatives, and by investing in recycling and reuse of materials. Establish and strengthen safe global, national, and local spaces for people to engage meaningfully in energy transition policy and legislation, with a particular focus on spaces for traditionally marginalized groups such as women and gender minorities, indigenous peoples, ethnic minorities, and young people.[42]

On this basis, the major international project known as the African Mining Vision (AMV) was launched. This is a policy framework established by the African Union in 2009 that aims to ensure the strategic use of Africa's mineral resources for inclusive and broad-based development. The African Union is an international organization with 55 member states on the continent. Founded in 2001 and launched in 2002, it replaced the Organization of African Unity (OAU) and is headquartered in Addis Ababa, Ethiopia. Its main objective is the political and economic integration of Africa, as well as promoting peace, security, and stability among its member states. The African Union also promotes development and cooperation in trade, education, and health, and is an observer member of the United Nations.

However, eight years after the creation of the AMV, this framework is suffering from slow implementation and a lack of awareness among key stakeholders in the mining sector. African leaders and citizens must act now to give the AMV's objectives a chance of being realized. This is a transformative policy with the potential to drive sustainable development on the continent.[43]

The African Mining Vision (AMV) was officially established in 2009 by the African Union to promote equitable and broad-based development through the prudent use of

[42] World Trade Organization. (2022). Indonesia – Measures relating to raw materials: Report of the Panel (WT/DS592/R & Add.1).
[43] Sasmal, S. (2024). A stacked deck that keeps getting higher: The relationship between critical raw materials, the WTO and "strategic" partnerships (Briefing Paper No. 79, April 2024).

the continent's natural resources. The AMV takes a broad and detailed perspective in considering how to achieve the continent's development through the creation of local value added based on the strategic use of Africa's mineral resources. It paves the way for the creation and realization of various types of linkages arising from the mining sector through the adoption of an industrial development and technical modernization approach.[44] The Vision Minière Africaine (VMA) recognizes the contribution of artisanal and small-scale mining to local economic development and promotes women's rights and gender justice. It establishes a progressive tax regime capable of curbing the flight of resources from the continent through tax fraud and evasion and illicit financial flows from the mining sector.[45] It upholds the principle of Free, Prior and Informed Consent (FPIC) for communities affected by mining activities and considers the social and environmental impacts of mining. Implemented through derivative policy instruments: the National Mining Vision, the African Governance Framework for the Mining Sector, and the Compact with the Private Sector, it is designed to be flexible and dynamic while maintaining an integrated and strategic vision for national development. However, eight years after its creation, questions remain about the slow implementation of the VMA and its ability to achieve the goals for which it was created. Although 24 of the 54 AU member states are at various stages of implementing this vision at the national level, progress has been slow and is therefore lagging behind the feverish expectations that surrounded its creation.[46]

Only one country, Lesotho, has fully adopted the AMV through the development of a National Mining Vision. Today, the VMA suffers from a general lack of awareness, particularly among key stakeholders in Africa's mining sector. Civil society, which

[44] Raimondi, P. P. (2021). Terre rare: Pechino punta all'Africa, ma non è sola. ISPI – Istituto per gli Studi di Politica Internazionale.
[45] Vlaskamp, M. C. (2024). Looking for resource sovereignty in a fragmenting global order: The EU's response to critical raw materials challenges. In EU foreign policy in a fragmenting international order (pp. 147–175). Springer Nature Switzerland.
[46] Baldassarre, B., & Carrara, S. (2025). Critical raw materials, circular economy, sustainable development: EU policy reflections for future research and innovation. Resources, Conservation and Recycling, 215, 108060.

could act as an advocate for the VMA, has not given its full support to mobilizing and defending policies at the local level, even though such actions could influence its adoption and impact. Above all, there is a glaring lack of independent analysis of the VMA's shortcomings that needs to be addressed[47]. Important lessons can also be learned from the experiences of the current implementation of the framework in various countries. The latest natural resource boom has come to an end. Growth is faltering in mineral-rich African countries, while inequality and economic fragility are on the rise. States are under intense pressure to conclude unfair mining deals and contracts and to grant mining companies tax incentives that will hurt them in the long run. However, the VMA has the potential to be a game-changer for Africa's mining sector. It comprehensively addresses the challenges associated with mineral resource exploitation in Africa with a view to ensuring sustainable development, while striving to meet global standards for equitable governance of extractive industries. As such, it deserves greater attention and stronger commitments to enable it to realize its transformative potential. This briefing note seeks to enrich the body of knowledge on the VMA. It presents a detailed analysis of the VMA to identify its strengths and weaknesses and the challenges to its implementation, while reviewing experiences from its application in several African countries[48]. It also highlights specific measures that can be taken to improve the impact and effectiveness of the VMA in Africa's mining sector.[49]

[47] Raimondi, P. P. (2021). Terre rare: Pechino punta all'Africa, ma non è sola. ISPI – Istituto per gli Studi di Politica Internazionale.
[48] Sasmal, S. (2024). A stacked deck that keeps getting higher: The relationship between critical raw materials, the WTO and "strategic" partnerships (Briefing Paper No. 79, April 2024).
[49] Colomban, P., Kırmızı, B., & Simsek Franci, G. (2021). Cobalt and associated impurities in blue (and green) glass, glaze and enamel: Relationships between raw materials, processing, composition, phases and international trade. Minerals, 11(6), 633.

1.3. The inter-African mining market and the objectives pursued by the AfCFTA about natural resources

The African Continental Free Trade Area (AfCFTA) represents the largest common market in the world. Part of the Agenda 2063 project, which aims to transform the role of the African continent in international relations, the AfCFTA plays a central role in the current geopolitical upheavals[50]. The real challenge will be to attract adequate investment by providing a sense of stability, while ensuring that human rights and the environment are respected by governments and foreign partners. This is an unprecedented opportunity for a continent rich in mineral resources that are strategic for the ecological and digital transition. The African Continental Free Trade Area (AfCFTA) is the flagship project of Agenda 2063, which aims to create a single African market for goods and services facilitated by the free movement of people, capital, and investment.[51]

This is very similar to the European context, which aims to deepen economic integration, promote and achieve sustainable and inclusive socio-economic development, gender equality, industrialization, agricultural development, food security, and structural transformation. As mentioned, this is the largest free trade area in the world, bringing together the 55 countries of the African Union (AU) and eight Regional Economic Communities (RECs). The overall mandate of the AfCFTA is to create a single continental market with a population of approximately 1.3 billion people and a combined GDP of approximately $3.4 trillion, to eliminate trade barriers and increase intra-African trade. The AfCFTA will help establish regional value chains in Africa, enabling investment and thus improving Africa's competitiveness in the

[50] Sasmal, S. (2024). A stacked deck that keeps getting higher: The relationship between critical raw materials, the WTO and "strategic" partnerships (Briefing Paper No. 79, April 2024).
[51] Vlaskamp, M. C. (2024). Looking for resource sovereignty in a fragmenting global order: The EU's response to critical raw materials challenges. In EU foreign policy in a fragmenting international order (pp. 147–175). Springer Nature Switzerland.

medium to long term. Trade under the African Continental Free Trade Agreement began on January 1, 2021[52]. The ultimate goal is to ensure that the AfCFTA is truly operational and that the gains from the initiative are enhanced in implementation in order to achieve an increase in interregional and intra-African trade that would bring economic development for the improvement of the continent as a whole. The World Bank has predicted that critical mineral production will need to increase by around 500% by 2050 to meet rising global demand and enable the world to avoid the worst impacts of climate change.[53] As such, Africa's resources are well positioned to play a crucial role, thereby enabling the continent to strengthen its position in green technology value chains. The common market initiative also takes center stage considering that the continent is home to numerous rare minerals: cobalt, copper, bauxite, chromium, platinum group metals, lithium, and rare earths. Global demand for these minerals is already high, but is expected to double by 2030 and quadruple by 2050 as a result of growing demand for key clean energy technologies to deliver the global transition to green energy. A recent analysis by S&P Global predicts that global demand for copper will double by 2035, driven by decarbonization initiatives aimed at achieving net-zero emissions by 2050[54]. Prices for minerals such as lithium, nickel, and aluminum are already rising, triggering an increase in investment, and the EU is already negotiating with African governments to secure mineral supplies for its energy transition. In this context, the AfCFTA acts as an incentive for African governments to improve Net Zero climate policies, increase production capacity, and simplify trade regulations.[55]

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[52] Raimondi, P. P. (2021). Terre rare: Pechino punta all'Africa, ma non è sola. ISPI – Istituto per gli Studi di Politica Internazionale.

[53] Iyiola, A. O., et al. (2023). An overview of environmental resources in Africa: Emerging issues and sustainable exploitation. In Sustainable utilization and conservation of Africa's biological resources and environment (pp. 543–570).

[54] Xu, L., Guo, X., Xu, M., et al. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, 12165.

[55] Lewicka, Ewa, Katarzyna Guzik, and Krzysztof Galos. "On the possibilities of critical raw materials production from the EU's primary sources." Resources 10.5 (2021): 50.

1.3.1. Member States and the search for ever greater regulatory harmonization

Sub-Saharan Africa in particular has significant reserves of minerals that are critical to the green economy. Guinea has large reserves of bauxite, Gabon is the second largest producer of manganese, the Democratic Republic of Congo (DRC) accounts for over 70% of global cobalt production, and Namibia is the leading exporter of uranium. Mozambique and Zimbabwe are third in graphite and chromium production, South Africa has most of the platinum reserves, while Zambia is the leading exporter of copper. However, the critical mineral mining industry is limited by weak infrastructure, problematic regulations, and poor compliance with sustainability standards.[56] Significant investment will therefore be needed to maximize the potential of these resources and compete globally with stronger competitors such as Australia, Canada, and the United States, which have better infrastructure that affects the ability to extract and process minerals efficiently. To translate natural resource wealth into industrialization and development, countries with large deposits of critical minerals will need to develop strong governance that promotes domestic mineral processing for domestic consumption, while respecting the environment and human rights. Transparent contracts, workers' rights, and environmental sustainability will be key to maximizing the opportunities offered by the continent's critical mineral value chain, which can lead to added value, job creation, local development, and equitable knowledge transfer. A free trade area alone cannot achieve these goals. Recently, Africa has seen an increase in the influence of Russia, China, Turkey, and the United Arab Emirates. In a period of major international political change, the European Union and the United States can play a role as reliable partners by following the strategies

[56] Vlaskamp, M. C. (2024). Looking for resource sovereignty in a fragmenting global order: The EU's response to critical raw materials challenges. In EU foreign policy in a fragmenting international order (pp. 147–175). Springer Nature Switzerland.

outlined above, offering an alternative to other influences and becoming a central part of the supply chains linked to the African free trade area[57].

Demand for critical raw materials is increasing due to their role in clean energy technologies, and projections indicate a potential shortage in supply. Developing countries, especially in Africa, which hold 30% of the world's mineral reserves, are key sources of these minerals. Sustainable mining and the use of natural resources for economic progress are crucial. Significant investment and tailored national policy approaches are needed to support this path to green industrialization. To address supply and demand gaps for essential raw materials, countries are forming partnerships between states to promote new projects and ensure supply resilience[58]. A white paper by the World Economic Forum examines the different models for such agreements and the priorities of developing countries for achieving sustainable and economic benefits through these partnerships.[59]

All nations want to dominate and benefit from their energy resources and the energy transition. Increasing the supply of critical minerals offers significant opportunities, but countries must consider where to integrate into clean technology value chains. One of the most widely announced ambitions and one of the stated objectives of the African Continental Free Trade Area (AfCFTA) is the creation of new regional value chains. The Forum document also examines the main provisions of the AfCFTA that parties could use to this end.[60]

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[57] Xu, L., Guo, X., Xu, M., et al. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, 12165.

[58] Yu, Y. M., Daipeng, M., & Zhu, W. (2023). Resilience assessment of international cobalt trade network. Resources Policy, 83.

[59] World Economic Forum. (2024). Translating critical raw material trade into development benefits. World Economic Forum. https://es.weforum.org/publications/translating-critical-raw-material-trade-into-development-benefits/

[60] Vlaskamp, M. C. (2024). Looking for resource sovereignty in a fragmenting global order: The EU's response to critical raw materials challenges. In EU foreign policy in a fragmenting international order (pp. 147–175). Springer Nature Switzerland.

For example, the Protocol on Investment includes provisions on joint investment promotion activities and others on promoting capital flows for emissions mitigation. Together, these provisions could encourage investment in a regional battery value chain, emphasizing low-carbon production technologies to make products competitive for net-zero buyers[61].

Achieving this vision is no easy task. Many African countries are currently seeking to move up the mineral value chain, which could create tensions between regional and national perspectives. Greater dialogue would help identify concrete efforts or outcomes to overcome these tensions. More data is also needed to determine what trade and investment facilitation measures within regions would be sufficient to whet investors' appetite for specific mining activities or the resulting value chain. Ultimately, investors and project developers will need to see a return on investment, which means that the economics of any project must make sense[62].

As discussions in this area continue, we have asked several thought leaders for their views on trade, critical minerals, and sustainable development. The Forum is working with stakeholders through its Securing Minerals for the Energy Transition (SMET) platform to expand fair, sustainable, and resilient primary supply and accelerate secondary mineral markets.[63].

[61] Yu, Y. M., Ma, D., & Zhu, W. (2023). Resilience assessment of international cobalt trade network. Resources Policy, 83.
[62] Xu, L., Guo, X., Xu, M., et al. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, 12165.
[63] David, M., Lyth, S. M., Lindner, R., & Harrington, G. F. (2021). Critical raw materials. In Future-proofing fuel cells: Critical raw material governance in sustainable energy (pp. 15–33).

1.4. Regional regulation and global trade: GATT rules applicable to raw materials

There are many factors to think about to understand the high volatility in this market and trade successfully. Since way back, commodities have been a big deal in the global market, and today they're still key not just for the economy but also for investors around the world. The primary global economy is based on the purchase and sale of commodities, so it is not surprising that it attracts the interest of so many investors. Therefore, commodity trading is basically the purchase and sale of basic products or natural resources, such as gold, wheat, coffee, natural gas, among others.[64]

In commodity trading, investors can buy and sell these products in specialized markets with the aim of making a profit based on changes in the prices of these products. On the other hand, this market sector is important for the global economy as it helps to set prices, manage risks, and facilitate the global supply of raw materials. Therefore, there are many novice traders who want to enter this type of market, as it is possible to make financial gains by speculating on the price movements of these assets, using technical and/or fundamental analysis, as well as risk management tools to make sound decisions in their trading operations. The process of buying and selling assets or commodities can take different forms for trading on the open market. Therefore, it can be traded on a spot basis or through futures contracts.[65]

The spot market involves selling and buying goods immediately on the market. The futures market, on the other hand, involves buying goods with the hope of reselling them later at a higher price. As traders seeking a business profit but without owning the asset, they have the option of using trading strategies to predict future prices and movements. Physical transactions are carried out on the paper market through futures,

[64] Lewicka, E., Guzik, K., & Galos, K. (2021). On the possibilities of critical raw materials production from the EU's primary sources. Resources, 10(5), 50.
[65] David, M., Lyth, S. M., Lindner, R., & Harrington, G. F. (2021). Critical raw materials. In Future-proofing fuel cells: Critical raw material governance in sustainable energy (pp. 15–33).

swaps, and other financial instruments. For these, traders can use a variety of methods to track prices, including programs designed for such purposes. Therefore, it is possible to trade whether you physically own the product or not, so there is enormous potential for profit. To understand the regulation of these markets, it is naturally essential to refer to the activities of the WTO.

As is well known, the WTO is the legal and institutional foundation of the global trading system. The WTO defines the main contractual rules that national governments refer to and represents the common platform on which trade relations between different countries are established and developed. The WTO took over from the General Agreement on Tariffs and Trade (GATT), which was signed after World War II and came into force on January 1, 1948. The original agreement stayed in place until the end of 1995 to make sure that individual countries and the whole system could smoothly transition to the new setup. The GATT still exists as "GATT 1994" (i.e., the amended version of the initial agreement) and forms an integral part of the WTO, establishing its key provisions on international trade in goods[66].

The creation of the WTO was decided by the GATT members themselves during the negotiations known as the "Uruguay Round." The last round of GATT negotiations, which ended in April 1994, revealed a desire to develop the system into something more structured and complex. This was not a simple "extension" of the GATT, but a genuine replacement. The WTO has broader objectives in terms of both activities and trade policies: it also regulates the exchange of services and the "trade in ideas," i.e., it also deals with aspects relating to intellectual property, whereas the GATT was concerned only with trade in products. Unlike the GATT, which was essentially a set of rules, the WTO is a permanent institution with its own secretariat[67]. While the GATT was applied on a "provisional basis" (although, after 40 years, governments had chosen

[66] Li, Y., Huang, J., Zeng, A., & Zhang, H. (2024). Trade risk transmission of global cobalt industrial chain based on multi-layer network. Resources Policy, 98, 105338.
[67] Yu, Y. M., Ma, D., & Zhu, W. (2023). Resilience assessment of international cobalt trade network. Resources Policy, 83.

to consider it a permanent agreement), the WTO has clearly required permanent commitments since its inception.[68] While multilateral agreements (i.e., between several countries) could also exist within the GATT, the WTO pursues multilateral agreements, which are binding on all members.

To avoid possible blockages or impediments, the WTO's dispute settlement system is faster and more automatic than the mechanism in place under the GATT. The key principles underlying the world trading system can be summarized as follows: - Trade without discrimination Article 1 of the GATT agreement[69] stipulates that member countries must accord products from other countries treatment no less favorable than that accorded to any other country. In other words, no country may grant special trade advantages to another[70].

The WTO aims to ensure stable and predictable trading conditions: it accepts the existence of customs tariffs, but limits and regulates their use by binding tariffs; once a tariff has been negotiated and fixed, it becomes a binding commitment for the country applying it, to the benefit of the stability of the system. . The WTO's strategy is to help these countries grow and progress, leading them towards full compliance with international commitments in a gradual and flexible manner.[71] This involves providing shock absorbers and margins of flexibility to gradually accompany these countries towards full responsibility. However, the Generalized System of Preferences remains in force, i.e., the possibility for a developed country to grant preferential market access conditions to a developing country. As can be seen, the WTO strategy was also designed with the aim of supporting growth in developing countries by providing appropriate flexible accompanying instruments, such as the Generalized System of

[68] Lewicka, E., Guzik, K., & Galos, K. (2021). On the possibilities of critical raw materials production from the EU's primary sources. Resources, 10(5), 50.
[69] Piérola-Castro, F. (2022). WTO Agreement on safeguards and Article XIX of GATT: A detailed commentary. Cambridge University Press.
[70] Xu, L., Guo, X., Xu, M., et al. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, 12165.
[71] David, M., Lyth, S. M., Lindner, R., & Harrington, G. F. (2021). Critical raw materials. In Future-proofing fuel cells: Critical raw material governance in sustainable energy (pp. 15–33).

Preferences. In such matters, the WTO has issued rulings, for example in relation to the China–Raw Materials (2012) dispute, rejecting the argument that Article XX of the GATT could be invoked to justify restrictions on the export of strategic resources.[72] As we will see in more detail below, the most significant obstacles to the application of the GATT concern the prohibition of quantitative restrictions and the high threshold for invoking environmental derogations. Also taken into consideration are WTO-plus obligations, trade agreements with a higher degree of restrictions than the Organization's standards, which are generally agreed upon during negotiations for the accession of a new member.[73]

In this scenario, in particular the impact of the decarbonization of the economy at the global level has enormous potential, first and foremost for raw materials: a transition to a net-zero emissions economy has already begun to catalyze a "super cycle" of those most directly involved. Some metals have seen a sharp price surge in recent years, and the cycle is likely to be long and 'greenflationary', as well as plagued by significant geopolitical supply risks, as demonstrated by the recent exponential trend in freight rates on major (vital) maritime trade routes.[74] Among the main raw materials, strategic metals in particular are the driving forces of economic life in the 21st century, whether in electronics, mobility or sustainable energy. Strategic metals include rare earth elements and special metals used in the manufacture of LEDs, magnets, electric motors, sensors, and many other components that are essential for smartphones, flat screens, cars, and many other applications in our homes. They have recently become available as physical asset investments, thanks in part to secure storage in customs warehouses.[75]

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[72] Spiegel Feld, D., & Switzer, S. (2012). Whither Article XX? Regulatory autonomy under non-GATT agreements after China—Raw Materials. The Yale Journal of International Law Online.

[73] Baroncini, E. (2012). The China–Rare Earths WTO dispute: A precious chance to revise the China–Raw Materials conclusions on the applicability of GATT Article XX to China's WTO Accession Protocol. Cuadernos de Derecho Transnacional, 4(2), 49–69.

[74] Yu, Y. M., Ma, D., & Zhu, W. (2023). Resilience assessment of international cobalt trade network. Resources Policy, 83.

[75] Lewicka, E., Guzik, K., & Galos, K. (2021). On the possibilities of critical raw materials production from the EU's primary sources. Resources, 10(5), 50.

In addition, logistics, particularly maritime logistics, is strategic for commercial traffic, and data relating to it can reveal macroeconomic dynamics in advance. It can be a contributing factor to global inflationary processes and, in the event of inefficiencies, can contribute to slowing down growth processes in entire macro-areas. Historically, positive economic cycles have favored the rush to build new ships—thanks in part to tax and credit incentives—which led, prior to 2020, to excess production capacity (known as "overcapacity") in the commercial maritime transport sector, with a consequent sharp drop in freight rates. However, with the shutdown of shipping following the global lockdown, shipping companies sold, decommissioned, or withdrew several units from their container fleets. It was better for shipowners to leave their ships in port, despite the costs involved in keeping them there.

With the restart of production and international trade, China has resumed its growth, production, and exports. Demand for maritime transport has grown. This has led to an increase in the availability of containers after the decline recorded in the first nine months of 2020[76]. However, shipowners have not put the same amount of cargo space back into service as in the pre-COVID period. Instead, they have left ships at berth, preferably in roadstead (where there is no mooring fee), and have resumed sailing with reduced cargo capacity[77].

The growing demand for space has consequently pushed up freight rates. In addition, mergers in recent years have led to concentration among shipping companies, with a few shipowners controlling the market. The recovery in demand and the growing concentration of operators have led to price increases since 2020, which have continued in 2021[78]. In addition, the reduced space available has also led to a slowdown in

[76] Sasmal, S. (2024). A stacked deck that keeps getting higher: The relationship between critical raw materials, the WTO and "strategic" partnerships (Briefing Paper No. 79, April 2024).
[77] Li, Y., Huang, J., Zeng, A., & Zhang, H. (2024). Trade risk transmission of global cobalt industrial chain based on multi-layer network. Resources Policy, 98, 105338.
[78] Yu, Y. M., Ma, D., & Zhu, W. (2023). Resilience assessment of international cobalt trade network. Resources Policy, 83.

services with longer delivery times, causing difficulties for production chains in various macro-areas around the world.[79]

Although the current regulatory framework includes coordination and development tools, it presents significant shortcomings that undermine its effectiveness in responding to the complex challenges of resource governance. This underscores the need for regulatory reinforcement to ensure that Africa can exploit its vast mineral wealth in a sustainable and equitable manner.

[79] David, M., Lyth, S. M., Lindner, R., & Harrington, G. F. (2021). Critical raw materials. In Future-proofing fuel cells: Critical raw material governance in sustainable energy (pp. 15–33).

CHAPTER TWO – *The extraction and commercialization of cobalt and its regulation at an international and local level*

SUMMARY**:** 2.1. Critical raw materials, multilateral trade systems and WTO regulations: the case of cobalt. – 2.2. Cobalt extraction and respect for human rights – 2.3. MoUs or Strategic Partnership Agreements (SPAs): the issues that characterise the trade agreements in terms of transparency, lack of participation of developing countries, absence of binding obligations, imposition of ESG standards without negotiation – 2.4. Multilateral co-operation

This part of the thesis focuses on the extraction and commercialization of cobalt, examining the international and local regulatory frameworks that govern this sector. It analyses cobalt as a critical raw material within multilateral trade systems, highlighting its growing strategic relevance for the energy transition and technological development. The chapter explores the role of international trade rules and cooperation mechanisms, as well as the human rights implications linked to cobalt mining activities. Particular attention is devoted to the regulatory instruments and agreements aimed at governing cobalt supply chains and to their capacity to address transparency, accountability, and the social and environmental impacts associated with extraction.

2.1. *Critical raw materials, multilateral trade systems, and WTO regulations: the case of cobalt*

The current geopolitical context is characterized by strong tensions and instability and high demand for raw materials, which is set to increase in the coming years: according to experts, global competition for resources is set to grow exponentially in the next decade and dependence on critical raw materials could soon replace dependence on oil.[80] In this regard, European Commission estimates predict, for example, that EU demand for rare earth elements—from which permanent magnets used in wind turbines and electric vehicles are produced—could

[80] Srivastava, N. (2023). Trade in critical minerals: Revisiting the legal regime in times of energy transition. Resources Policy, 82, 103491.

increase sixfold by 2030 and sevenfold by 2050; EU demand for lithium, used in the production of batteries for mobility and energy storage, could increase twelvefold by 2030 and twenty-onefold by 2050; finally, EU demand for gallium, used in the production of semiconductors, could grow by as much as seventeenfold by 2050.

The international crises of recent years, following the COVID-19 emergency and the Russian military invasion of Ukraine, have highlighted the European Union's heavy dependence on imports of raw materials, which are often concentrated in a limited number of third countries, both in terms of extraction and processing. In this regard, it should be noted that China is the main supplier of critical raw materials, both globally and within the European Union: for example, the EU purchases 97% of the magnesium it uses from China; heavy rare earths, used in permanent magnets, are refined exclusively in China; 63% of the world's cobalt, used in batteries is mined in the Democratic Republic of Congo, while 60% is refined in China[81].

One of the greatest risks facing trade in these critical minerals is the disruption of supply chains. The high concentration of their production and processing constitutes an additional vulnerability for those powers that depend on external supplies, such as the US, the EU, and Japan[82]. China, the world's leading producer and exporter of many of these minerals, has already shown its willingness to impose export controls on national security grounds. Under this justification, growing geopolitical tensions between China and the US are distorting the markets for these minerals. The fragmentation of supply chains, together with the rise of national and regional protectionist measures, are some of the risks facing the economy related to critical minerals. As already explained, critical minerals (also known as new economy or strategic minerals) are essential elements for the energy transition, technological progress, and digitalization. Some of them are essential for the defense and aerospace sectors.

Their criticality stems not only from the imbalance between supply and demand in terms of geological reserves, but also from the capacity to extract and process them and from possible disruptions in supply chains. Trade in these minerals poses major challenges not only from an economic point of view but also from a security perspective. As we move towards energy

[81] Rao, A., et al. (2024). Minerals at the crossroads: Economic policies, global trade, and renewable energy in the Global South. Resources Policy, 97, 105257.
[82] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals' criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.

transition and technological progress, global demand for these critical minerals is estimated to increase by 400-600% in the coming decades[83]. For lithium and graphite, both used in electric vehicle batteries, demand could increase by up to 4000%.[84]

This high demand for critical minerals could become a bottleneck for decarbonization. Today's supply and investment plans for many of these critical minerals fall far short of what would be needed to support the accelerated development of solar panels, wind turbines, and electric vehicles to meet climate goals. Digital technologies are also dependent on the supply of various elements such as copper, gallium, germanium, gold, indium, rare earths, tantalum, and platinum group metals. In addition to this growing demand associated with climate policies, some critical minerals have also become a source of growing concern from the point of view of national security and economic growth, mainly for the major powers[85].

One of the biggest risks facing trade in these critical minerals is the disruption of supply chains[86]. The high concentration of their production and processing constitutes an extreme vulnerability for those powers that depend on foreign supply, such as the US, the EU, and Japan. China, the world's leading producer and exporter of many of these minerals, has already shown its willingness to impose export controls on national security grounds[87]. Under this justification, growing geopolitical tensions between China and the US are distorting the markets for these minerals. The fragmentation of supply chains, together with the rise of national and regional protectionist measures, are some of the risks facing the economy related to critical minerals[88]. The COVID-19 pandemic, the war in Ukraine, the food security crisis, geopolitical tensions, and dependencies in the energy and digital sectors have highlighted the vulnerability of supply chains in all sectors.

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[83] Sohail, M. T., & Md Din, N. (2024). How do digital inclusion and energy security risks affect mineral resources trade? Evidence from world-leading mineral trading countries. Resources Policy, 89, 104528.
[84] Sohail, M. T., & Md Din, N. (2024). How do digital inclusion and energy security risks affect mineral resources trade? Evidence from world-leading mineral trading countries. Resources Policy, 89, 104528.
[85] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals' criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.
[86] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals' criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.
[87] Srivastava, N. (2023). Trade in critical minerals: Revisiting the legal regime in times of energy transition. Resources Policy, 82, 103491.
[88] Sohail, M. T., & Md Din, N. (2024). How do digital inclusion and energy security risks affect mineral resources trade? Evidence from world-leading mineral trading countries. Resources Policy, 89, 104528.

In recent years, geopolitical rivalries generated by the war in Ukraine and the increasingly bitter rivalry between China and the US have fueled greater protectionism and the growing use of cross-border restrictions on critical raw materials for national security reasons. These restrictions affect energy security, food security, trade in strategic minerals and, in general, the entire global economic system[89].

The pace of trade restrictions on critical raw materials around the world has increased since 2020. The number of trade barriers established per year has almost tripled since 2019, according to the International Monetary Fund (IMF), and these protectionist measures continue to affect global trade by limiting trade volumes, increasing costs for businesses, and disrupting supply chains. This growing trend of export restrictions on critical materials has triggered a series of trade conflicts, some of which are being addressed at the World Trade Organization (WTO). The period of rapid globalization and integration has come to an end, and the forces of protectionism are on the rise. International cooperation is in retreat, and the world is witnessing increasing fragmentation: a process that begins with rising barriers to trade and investment and, in its extreme form, ends with the breakup of countries into rival economic blocs, a result that risks reversing the transformative achievements of global economic integration. This transformation could lead to a 7% reduction in global economic output[90]. In this context, some analysts have coined the term “geo-economic fragmentation” to describe a reversal of global economic integration driven by policies based, generally, on strategic considerations. These considerations could include national or economic security, as well as improving autonomy through reduced dependence on other countries[91].

According to the OECD, around 10% of the global value of critical raw material exports has faced at least some form of export restriction in recent years[92]. Export restrictions take many forms, including quotas, export taxes, mandatory minimum export prices, or licenses.[93] In the

[89] Rao, A., et al. (2024). Minerals at the crossroads: Economic policies, global trade, and renewable energy in the Global South. Resources Policy, 97, 105257.
[90] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals’ criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.
[91] Srivastava, N. (2023). Trade in critical minerals: Revisiting the legal regime in times of energy transition. Resources Policy, 82, 103491.
[92] Koyamparambath, Anish, et al. "Supply risk evolution of raw materials for batteries and fossil fuels for selected OECD countries (2000–2018)." *Resources Policy* 75 (2022): 102465.
[93] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals’ criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.

case of critical minerals needed for the energy transition, these restrictions not only contribute to geo-economic fragmentation but also jeopardize the achievement of climate goals[94]. These measures could affect the global supply of critical minerals, leading to upward pressure on global prices and raising concerns about the security of raw material supplies to manufacturers.

In the specific case of critical minerals used in the renewable energy and technology sectors, their extraction and processing is highly concentrated in a few countries. With regard to extraction, for example, the Democratic Republic of Congo accounts for 70% of global cobalt mining. As for nickel, the three main producers (Indonesia, the Philippines, and Russia) account for 60% of global production. In the case of lithium, the three main producers (Australia, Chile, and China) account for more than 90%.[95]

China supplies 80% of rare earths, refines 68% of the world's nickel, 40% of its copper, and 59% of its lithium. Chinese companies own 15 of the 17 cobalt mining operations in the Democratic Republic of Congo. In addition, it has 78% of the world's electric vehicle battery manufacturing capacity, most of the world's solar panel production, and more than three-quarters of lithium-ion battery factories. China's share of refining is around 35% for nickel, 50% to 70% for lithium and cobalt, and almost 90% for rare earths. In fact, there are only five rare earth refineries outside Chinese territory: Nevada, Malaysia, France, Estonia, and Australia[96]. According to the European Union's 2023 report on critical raw materials, China is the world's sole supplier of dysprosium (100%), neodymium (100%), and yttrium (100%).[97] It also dominates the supply chain for germanium (83%), gallium (94%) and natural graphite (67%), which are critical in the defense sector, particularly for combat aircraft, but also for missiles and radar. [98]

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[94] Sohail, M. T., & Md Din, N. (2024). How do digital inclusion and energy security risks affect mineral resources trade? Evidence from world-leading mineral trading countries. Resources Policy, 89, 104528.
[95] Assonime. (2023). Note e studi 5-2023: Commercio internazionale – aumento delle restrizioni degli scambi commerciali nel mondo.
[96] Rao, A., et al. (2024). Minerals at the crossroads: Economic policies, global trade, and renewable energy in the Global South. Resources Policy, 97, 105257.
[97] Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs. (2023, March 16). Study on the Critical Raw Materials for the EU 2023: Final report (Catalogue No. ET-07-23-116-EN-N; ISBN 978-92-68-00414-2; DOI 10.2873/725585). Publications Office of the European Union.
[98] Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs. (2023, March 16). Study on the critical raw materials for the EU 2023: Final report (ET-07-23-116-EN-N). Publications Office of the European Union.

In 2012, the World Trade Organization (WTO) incorporated into its decisions the findings of the Panel and the Appellate Body in the dispute *China – Raw Materials*, which had previously been brought by the European Union and other allied countries such as the United States and Mexico against China. The dispute concerned restrictions and taxes on commercial exports imposed by the People's Republic on certain raw materials generally considered strategic in the current international trade system, including bauxite, fluorspar, zinc, and silicon, all of which have become essential to global industry in recent years. According to the plaintiffs' arguments during the dispute, these restrictions were contrary to the rules of the GATT and the obligations that China had assumed in this regard upon its formal accession to the World Trade Organization in 2001.

In the dispute that arose on this issue, China's justification for the measures taken was based on the principle of sovereignty over natural resources and the more general right to economic development guaranteed by international treaties.

However, the Panel rejected all the arguments put forward by China, pointing out that, although it is necessary to fully recognize in general terms the permanent sovereignty of States over the natural resources of their respective territories, WTO membership entails an obligation for member states to comply with the commitments they have entered into in negotiations. Above all, China had expressly accepted, in its Accession Protocol, the condition of eliminating taxes and restrictions imposed on exports for almost all goods covered by the agreements, with the exception of a few exceptions that had been specifically indicated in the treaties. Although China invoked certain fundamental exceptions provided for in the GATT text, such as Article XX (exception justified on environmental or health grounds) and Article XI:2(a) (exception justified on grounds of critical shortages), these arguments put forward by Beijing were not considered admissible, as their content had not been explicitly provided for in the Protocol.

China also attempted to invoke Article XX(g) to justify the measures as necessary for the conservation of resources that are by their nature exhaustible, but the Panel nevertheless found that there was no real intention behind China's initiative to preserve the resources in question, since the export restrictions were accompanied by a significant increase in domestic use. The same environmental argument put forward by China and based on Article XX(b) was not considered admissible, as Beijing was unable to present a coherent strategic plan for reducing

pollution. China then invoked Article XI:2(a) to argue that the measures had to be taken with the aim of preventing shortages of resources that had to be considered essential, but the Panel also rejected this argument, finding that these measures were not temporary and had not been effectively taken in response to a genuine emergency.

Another point to highlight concerns the relationship between the general rules of the GATT and the specific obligations that are included in the accession protocols. The dispute in question established that, where there is no explicit reference, the GATT exceptions cannot automatically apply to the obligations laid down in the protocol. This interpretation consolidates the view that WTO member countries must always negotiate the clauses included in the protocols with great care if they wish to preserve room for maneuver in their application. As this analysis shows, the *China – Raw Materials* has once again highlighted the essential and priority value of WTO commitments over the general principles of international law on resource sovereignty, setting an important precedent for countries that often, as in the case of most so-called 'developing' countries, use their natural resources as a tool for economic growth. Following the ruling in question, the EU, the US, and Japan then brought a new dispute against the People's Republic in order to address similar restrictions that Beijing imposed on rare earths, tungsten, and molybdenum, highlighting once again the strategic importance of raw materials in the overall framework of international trade[99]

2.2. Cobalt extraction and respect for human rights

Cobalt mining is linked to serious abuses against workers, as revealed by a 2021 investigation carried out by Raid together with the Legal Aid Center[100], an organization that provides legal assistance to victims of human rights violations in Congo. The investigation, entitled "The road to ruin? Electric vehicles and the violation of workers' rights in Congo's cobalt mines," revealed

[99] Rolland, S. E. (2012, June 19). China-Raw Materials: WTO rules on Chinese natural resources export dispute. American Society of International Law.
[100] Rights and Accountability in Development. (2021, November 7). The road to ruin? Electric vehicles and workers' rights abuses at DR Congo's industrial cobalt mines. RAID. https://raid-uk.org/post-library/the-road-to-ruin-electric-vehicles-and-workers-rights-abuses-at-dr-congos-industrial-cobalt-mines/

that cobalt mine workers are victims of discrimination, work in appalling conditions, and receive very low wages[101]. “Working conditions are even worse for subcontracted workers, who account for almost 60% of the total workforce. Not only do they receive wages well below the minimum wage, which is calculated at $480 per month, but workers report long shifts, lack of safety in the workplace, lack of paid leave and holidays, and no access to basic healthcare,” Raid reports. In 2022, a subcontractor of Sicomines, whose owners include the Congolese government and the China Railway Group, ended up in court. The reason? The company denied workers the right to form a union and elect their own representatives[102].

Legal action and a visit by the labor inspectorate to the mining site resulted in the company allowing workers to elect union representatives. Similar legal action was successfully brought against Somidez, a company that brings together the China Nonferrous Metal Mining Group and Gécamines, the Congolese state mining company. Other cases reported by RAID concern the case of a security guard working as a subcontractor for the company Balto: he was injured during a robbery at the mining site and lost a leg. Although it was obliged to cover the costs of the damage caused at the workplace, the company refused to pay the medical expenses (just over $9,000). The worker took legal action and won[103]. In another case, a company that had illegally terminated the contracts of around 100 workers and failed to pay their wages during a temporary mine closure for maintenance was ordered to compensate the workers. Two cases are still pending: in one, ten workers sued the company for degrading treatment and inhumane working conditions, including discriminatory and racist behavior, physical attacks and verbal insults, and lack of safety. The other concerns a class action lawsuit filed in November 2023 against a subcontractor, Elias & Matis Trading, accused of violating labor law, preventing workers from unionizing, failing to provide health protection, carrying out illegal dismissals, and failing to provide workers with administrative documents such as pay slips. “Workers are not waiting for the companies they work for to act voluntarily in the interests of local communities. On the contrary, with these lawsuits, they are testing the laws of the state and

[101] Pasotti, L. (2024, March 6). Congo: cobalto, i minatori denunciano le compagnie minerarie. Osservatorio Diritti. https://www.osservatoriodiritti.it/2024/03/06/congo-cobalto/
[102] Sohail, M. T., & Md Din, N. (2024). How do digital inclusion and energy security risks affect mineral resources trade? Evidence from world-leading mineral trading countries. Resources Policy, 89, 104528.
[103] Sohail, M. T., & Md Din, N. (2024). How do digital inclusion and energy security risks affect mineral resources trade? Evidence from world-leading mineral trading countries. Resources Policy, 89, 104528.

demonstrating that they themselves can be part of the energy transition. Mining companies and the government should take note. This is the positive change needed for a transition away from fossil fuels that will benefit everyone," concludes Raid [104].

2.3. MoUs or Strategic Partnership Agreements (SPAs): the issues that characterize trade agreements in terms of transparency, lack of participation of developing countries, absence of binding obligations, imposition of ESG standards without negotiation.

The origins of bilateral investment treaties date back to the late 1950s and were developed to try to complement the limited protections that customary international law afforded to foreigners. While there were some minimal protections for foreign investors who might find themselves abused by a host country, there was also persistent disagreement about the more specific forms of treatment that host governments should provide[105].

For example, at the United Nations, the governments of developed and developing countries were locked in a bitter dispute over whether governments could nationalize foreign investments in the natural resource sector without paying full compensation to foreign investors. Against this backdrop, bilateral investment treaties were expected to provide (in theory) greater certainty and clarity regarding the legal rules that would apply, at least with respect to investments flowing between a given group of countries. However, the terms of the treaties still require interpretation and arbitration to determine their concrete application, and most of them allow investors to initiate arbitration proceedings in the event of alleged violations by a host government[106]. Germany signed the first modern bilateral investment treaty with Pakistan in 1959, and other European capital-exporting governments would launch their own bilateral

[104] Rights and Accountability in Development. (2021, November 7). The road to ruin? Electric vehicles and workers' rights abuses at DR Congo's industrial cobalt mines. RAID. https://raid-uk.org/post-library/the-road-to-ruin-electric-vehicles-and-workers-rights-abuses-at-dr-congos-industrial-cobalt-mines/

[105] Srivastava, N. (2023). Trade in critical minerals: Revisiting the legal regime in times of energy transition. Resources Policy, 82, 103491.

[106] Vivoda, V., Matthews, R., & McGregor, N. (2024). A critical minerals perspective on the emergence of geopolitical trade blocs. Resources Policy, 89, 104587.

treaties in the following years (apart from the treaties on which this paper focuses, an investor or its local representative may also sign contracts, concessions, or agreements with the host country's local authorities). It should be noted that most bilateral investment treaties do not force countries to open their economies to foreign investors. While some countries require market access as part of such treaties, most do not oblige governments to privatize sensitive economic sectors (e.g., airlines, banks, or insurance) or to open these sectors to foreign ownership. Rather, the treaties extend their protection to foreign investments made in accordance with existing rules on foreign ownership in the local economy. Thus, if a state allows a foreigner to buy a local business or establish a wholly new investment, these investments could be covered by an international treaty that requires governments to commit to higher standards of protection than those available under local law[107]. These investment treaties are generally instruments with a single purpose: to protect foreign investors and their assets, rather than to impose legal obligations or responsibilities on foreign investors. Although each case is different, over time they generally guarantee the repatriation of profits and other funds related to the investment, protection against treatment less favorable than that accorded to local investors or investors from third countries (national treatment and most-favored-nation treatment, respectively), certain absolute standards of protection (e.g., "fair and equitable treatment" or "full protection and security," as well as the promise of compensation in the event of nationalization or expropriation)[108].

Perhaps the most important protection provided by an investment treaty is that of "fair and equitable treatment." The meaning of this obligation continues to evolve and is a matter of disagreement as to whether the standard is uniform across countries (regardless of their level of development). At a minimum, the standard is designed to protect against "denial of justice"; however, states may also violate its terms when they treat foreign investors in bad faith or fail to provide procedural guarantees. In some cases, arbitrators have taken the view that the protection safeguards the "legitimate expectations" of investors, for example, when government officials or entities made certain promises or statements and subsequently failed

[107] Saka, U. M., Duzgun, S., & Bazilian, M. D. (2024). Analysis of world trade data with machine learning to enhance policies of mineral supply chain transparency. Resources Policy, 89, 104671.
[108] Vivoda, V., Matthews, R., & McGregor, N. (2024). A critical minerals perspective on the emergence of geopolitical trade blocs. Resources Policy, 89, 104587.

to fulfill them. A State may, for example, fail to issue permits it had promised to a foreign investor or not proceed with the sale of (previously offered) shares in a state-owned company. However, there is no agreement on what exactly investors should expect from their host countries, whether it be a stable business environment, transparency in negotiations with government officials, or certain standards of administrative efficiency and procedural guarantees.

Some observers have noted that such an enormous set of duties would create problems even for the government apparatus of the most advanced economies, let alone less developed poor nations. Lawyers acting on behalf of the Chilean government aptly characterized the above interpretation as an "extreme" program of good governance imposed on states, which was cited with approval in subsequent cases. The inability to comply with this high interpretation of the fair and equitable treatment standard may lead to an obligation to pay compensation to investors who are denied such protection[109]. Another key provision of an investment treaty is that relating to expropriation. The problem of how to define the concept of "indirect" expropriation arose in relation to the North American Free Trade Agreement (NAFTA), which contains provisions similar to those found in investment treaties. For a long time, there was uncertainty about the need to draw a clear line between regulatory measures that had a certain impact on the profitability of an investment and those that amounted to an "indirect" expropriation of the investment (e.g., appropriation or deprivation carried out through indirect or regulatory mechanisms)[110].

This ongoing uncertainty has prompted some governments to introduce new language in their future investment treaties to clarify that regulatory measures in the public interest could rarely be characterized as indirect expropriation under an investment treaty. Although most bilateral investment treaties do not assign explicit responsibilities to investors, there have been several proposals to introduce them into treaty texts, making investors' legal protections conditional on compliance with various obligations, including compliance with the corporate responsibility instruments of the International Labour Organization (ILO) and the Organization for Economic

[109] Rao, A., et al. (2024). Minerals at the crossroads: Economic policies, global trade, and renewable energy in the Global South. Resources Policy, 97, 105257.
[110] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals' criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.

Cooperation and Development (OECD), as well as the obligation to operate their investments in accordance with international labor and human rights conventions. In a model draft investment treaty, drawn up in 2008 for discussion by the Norwegian government, some efforts are made to introduce modest responsibilities for investors. In particular, the preamble to the Norwegian agreement, which will be relevant whenever arbitrators are called upon to interpret the provisions of the treaty, refers to several objectives, including corporate social responsibility, the fight against corruption, and the principle of "transparency, accountability, and legitimacy" for all participants in the foreign investment process. In addition, the draft treaty "encourages" investors to comply with the OECD Guidelines for Multinational Enterprises and the United Nations Global Compact; however, it does not go so far as to mandate specific obligations for investors[111].

Apart from these attempts, there have been academic proposals to introduce clauses in investment treaties designed to give citizens the right to bring "counterclaims" against foreign investors in the event of certain human rights violations. However, such proposals have not left the drawing board to become actual treaties. Indeed, in his 2008 report to the United Nations Human Rights Council, the Special Representative of the Secretary-General on Human Rights, John Ruggie, lamented that the legal rights of transnational corporations have been greatly expanded, including through bilateral treaties, but that the legal framework governing these same corporations has not been expanded to the same extent[112].

2.4. *Multilateral cooperation*

Both the EU and the US are concerned about their high dependence on China and other countries that dominate the supply chains of critical minerals, as there is a risk that they may not be able or willing to supply these materials in the future. With the deepening of geopolitical tensions, national security considerations for imposing export restrictions or increased

[111] Saka, U. M., Duzgun, S., & Bazilian, M. D. (2024). Analysis of world trade data with machine learning to enhance policies of mineral supply chain transparency. Resources Policy, 89, 104671.
[112] United Nations. (2008). Report of the Special Representative of the Secretary-General on the issue of human rights and transnational corporations and other business enterprises (A/HRC/8/5/Add.1). United Nations Digital Library. https://digitallibrary.un.org/record/626739?ln=en

protectionism by states constitute a barrier that causes companies to be wary of investing, sharing technology, or integrating supply chains[113].

In addition to the production of certain critical minerals, China also dominates the processing and manufacturing of components necessary for the energy and digital transition. Aware of this major advantage, China has used trade in certain critical minerals as a tool of economic coercion. It did so with Japan in 2010 following territorial disputes in the South China Sea and restrictions on rare earth exports for environmental reasons, also established in 2010, which were denounced by the US, the EU, and Japan before the WTO. During 2023, China has imposed new restrictions on exports of strategic minerals and related technology, citing national security reasons. In July, it introduced restrictions on export permits for gallium and germanium chip manufacturing materials. On December 1, it established similar requirements for several types of graphite22 and, since December 21, it has also extended restrictions on exports related to the extraction and separation of rare earth technologies to include magnet technology[114].

Gallium and germanium are elements used in the manufacture of microchips used in missile systems and military technology. China accounts for around 94% of the world's gallium and 83% of its germanium and currently supplies half of the US's supplies. Some analysts have viewed gallium and germanium as chess pieces in a geopolitical game of enormous proportions. In fact, a 2022 analysis by experts from the US Geological Survey (USGS) found that a 30% disruption in the supply of gallium could cause a $602 billion decline in US economic output. This would represent a 2.1% reduction in Gross Domestic Product (GDP)[115].

According to a July 2023 report by the Center for Strategic and International Studies entitled Mineral Monopoly: China's Control of Gallium is a Threat to National Security, gallium-based

[113] Vivoda, V., Matthews, R., & McGregor, N. (2024). A critical minerals perspective on the emergence of geopolitical trade blocs. Resources Policy, 89, 104587.
[114] Pasotti, L. (2026, January 10). Rapporto Draghi: 2. Materie prime critiche. EUNews. https://www.eunews.it/rapporto-draghi-parte-b/2-materie-prime-critiche/
[115] Vivoda, V., Matthews, R., & McGregor, N. (2024). A critical minerals perspective on the emergence of geopolitical trade blocs. Resources Policy, 89, 104587.

semiconductors are crucial for next-generation radar and missile defense systems, electronic warfare, and communications equipment[116].

From an extraction standpoint, gallium is found in small quantities alongside other minerals distributed globally, making it feasible for other countries to diversify extraction. Gallium is extracted almost exclusively as a by-product of zinc, aluminum, and other metal mining. The main producers are China, Germany, Kazakhstan, and Ukraine. However, as with other critical minerals, China dominates the processing and manufacturing of the mineral into useful products for industry, and this dependence is more difficult to break in the short term.

As for germanium, this element was one of the first materials used in the production of semiconductors before the widespread use of silicon. It has similar properties to silicon and is used in the production of transistors, diodes, and other electronic components.

Germanium is extracted as a by-product of zinc production and from coal fly ash. It is estimated that 75% of global germanium production comes from zinc ores, mainly the zinc sulfide ore sphalerite, and 25% from coal. The largest end use of germanium is in optical fibers, which accounted for 34% of global germanium consumption in 2023. It is also used in infrared spectroscopes, as both germanium and germanium oxide are transparent to infrared radiation. For this reason, it is used to manufacture lenses and windows for IR radiation. These are mainly used in military applications, such as night vision devices. Uses outside the armed forces are in advanced firefighting equipment, satellite imaging sensors, and medical diagnostics[117]. According to the European business organization Critical Raw Materials Alliance (CRMA), China produces about 60% of the world's germanium, with the remaining 40% coming from Canada, Finland, Russia, and the United States[118].

China dominates the production of these two metals not because they are rare, but because it has been able to keep its production costs fairly low and manufacturers elsewhere have been unable to match them. Graphite is a material used in batteries, fuel cells, and nuclear reactors.

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[116] Saka, U. M., Duzgun, S., & Bazilian, M. D. (2024). Analysis of world trade data with machine learning to enhance policies of mineral supply chain transparency. Resources Policy, 89, 104671.
[117] Vivoda, V., Matthews, R., & McGregor, N. (2024). A critical minerals perspective on the emergence of geopolitical trade blocs. Resources Policy, 89, 104587.
[118] Quoted Business. Germanio e gallio: Ecco dove vengono prodotti. https://www.quotedbusiness.com/thm-24-energie-risorse/paese-13-mondo/art-10681-germanio-e-gallio-ecco-dove-vengono-prodotti

The controls imposed by China have been justified on grounds of "national security," which will require special export permits for three grades of graphite. In 2021, China produced 79.1% of the world's natural graphite, despite having only 22% of the world's reserves[119]. While China argues that these restrictions are in the interest of its national security, some experts point out that this is a retaliatory measure in response to restrictions on the high-tech sector previously imposed by the US, Japan, and the Netherlands. The US, Japan, and the Netherlands jointly restricted exports of equipment used to produce the most advanced nodes with which to manufacture next-generation chips in response to Chinese President Xi Jinping's "military-civil fusion" policy[120].

China is likely to continue to use its monopoly on the supply of critical materials by imposing new trade restrictions. Time is not on its side, as although it is unlikely that Western countries will be able to completely decouple themselves from China's supply of critical materials in the next 15 years—the estimated time it would take to set up a new mining facility— dependence is likely to decrease over time due to political efforts to achieve more diversified supply chains and obtain minerals through recycling. One of the first consequences of the latest restrictions imposed by China has been an increase in prices. In particular, gallium prices have already risen significantly, by approximately 30% since the new controls were announced on July 3, and will continue to rise. Before the restrictions were imposed, China had exported 5.1 tons of gallium and 8 tons of germanium in July. However, during August, China did not sell any gallium or germanium on international markets, and although Chinese exports of gallium and germanium products rebounded in October, volumes remain well below last year's levels due to the export restrictions introduced in August.

The imposition of export restrictions or their sudden removal can also cause sudden changes in the world due to prices that directly affect investments in the mining industry, which are necessary in the long term and require large amounts of capital and know-how[121]. China, which remains heavily dependent on the US dollar to set prices and settle commodity contracts, is

[119] Wischer, G., & Bazilian, M. (2024). The rise of great mineral powers. Journal of Indo-Pacific Affairs, 7(2).
[120] Abbas, S., et al. (2024). The contribution of resource-based taxation, green innovation, and minerals trade toward ecological sustainability in resource-rich economies. Resources Policy, 93, 105092.
[121] Vivoda, V., Matthews, R., & McGregor, N. (2024). A critical minerals perspective on the emergence of geopolitical trade blocs. Resources Policy, 89, 104587.

keen to seize the opportunity presented by the energy transition and its dominance over critical minerals to increase the influence of the renminbi in global commodity markets. To this end, it has established mineral commodity exchanges in resource-rich areas such as the Baotou Rare Earth Commodity Exchange, which began operating in 2014, and the Ganzhou Rare Metal Exchange, where China's renminbi currency is used to quote prices for spot trading of tungsten, rare earth products, and critical minerals such as cobalt, which, as already mentioned, are essential for the transition to clean energy[122].

The search for alternative sources of supply has already become a necessity for the US, the EU, and Japan. While alternatives exist for the United States and its allies, building an independent supply chain for gallium and germanium processing could require investment and could take years to develop, as processing these elements can be costly, technologically complex, energy-intensive, and polluting.

Alternative countries for supply include the US, Canada, Belgium, and Germany for germanium, and South Korea and Japan for gallium. In addition, South Korea has large government stockpiles, which should soften the impact on the country's chip manufacturers. However, increasing production takes time due to the inability to process the materials, as well as existing environmental regulations that prevent processing and mining due to the significant pollution they cause. Faced with these challenges, the Democratic Republic of Congo may become a lifeline for Western countries, as it could contribute up to 30% of global germanium production with the exploitation of a new plant[123].

Everything points to the fact that the latest restrictions on exports of strategic minerals from China are not the first nor will they be the last to be imposed at the international level. The natural resource-rich countries on which the United States and the EU depend for minerals are also adopting trade restrictions to demand more downstream processing. These countries seek to increase the economic benefits of value-added processing, such as job creation and capital investment. For example, Indonesia, the world's largest nickel producer thanks to Chinese investment, banned nickel ore exports in 2020. Following Indonesia's lead, the Philippines, the

[122] Saka, U. M., Duzgun, S., & Bazilian, M. D. (2024). Analysis of world trade data with machine learning to enhance policies of mineral supply chain transparency. Resources Policy, 89, 104671.
[123] Wischer, G., & Bazilian, M. (2024). The rise of great mineral powers. Journal of Indo-Pacific Affairs, 7(2).

world's second largest producer of mined nickel, is considering banning or taxing exports of its nickel ore. Zimbabwe, which has Africa's largest lithium reserves and some of the world's largest hard rock lithium reserves, banned the export of unprocessed lithium in 2022. Ghana and Namibia have also banned the export of unprocessed minerals. All these measures suggest that the supply chains for minerals needed for the energy and digital transition, as well as for the defense sector, are highly vulnerable to potential restrictions. Export controls also faced challenges that went beyond legal ones[124]. The biggest problem facing the effectiveness of export control measures in the short term is smuggling. This was already a problem before export controls were introduced; in 2009, smuggling accounted for 40% of China's rare earth exports, peaking at almost 50% at one point. Restrictions on mineral trade are also a consequence of protectionist measures that powers such as the US and the EU have put in place to counteract their extreme vulnerability to a disruption in the supply chains of critical minerals.

On the one hand, the US, the EU, and Japan are seeking to minimize—not eliminate—their dependence on China for both the extraction and processing of these critical minerals. To this end, they are pursuing policy initiatives aimed at protecting domestic industry, seeking strategic alliances with new partners, diversifying supply sources, and seeking new extraction sites[125]. The EU's Raw Materials Act, which has yet to be approved, and the US Inflation Reduction Act (IRA) are examples of how politics is reshaping critical raw material supply chains. The IRA is part of Biden's Made in America policy agenda, established to address the US's high vulnerability to supply chains for critical materials needed for the green and digital transition, which affect not only the energy sector but also the defense sector. For the US, the IRA is a boost for the development of domestic industries related to clean energy. It establishes specific requirements to promote domestic sourcing and manufacturing and offers tax incentives for companies that carry out final assembly in North America or in a country with which the US has a free trade agreement. The ultimate goal is to relocate the supply chains of materials considered key to the energy and digital transition[126].

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[124] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals' criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.
[125] Abbas, S., et al. (2024). The contribution of resource-based taxation, green innovation, and minerals trade toward ecological sustainability in resource-rich economies. Resources Policy, 93, 105092.
[126] Saka, U. M., Duzgun, S., & Bazilian, M. D. (2024). Analysis of world trade data with machine learning to enhance policies of mineral supply chain transparency. Resources Policy, 89, 104671.

The IRA also explicitly targets inputs from so-called foreign entities of concern (China, Russia, North Korea, or Iran) and stipulates that, as of 2025, critical materials will no longer be allowed to come from any of these countries. At present, the US has only 20 free trade agreements, and only one with an African nation, Morocco, which could limit its ability to meet the growing demand for electric vehicles with an adequate supply of critical minerals. For the US, the IRA is justified because it will enable it to reduce greenhouse gas emissions by 37-41% in 2030 compared to 2005. However, with new national and/or federal regulatory measures, these reductions could reach 50%[127].

However, there are signs that the scale of the IRA is already distorting the energy investment market, creating new uncertainties in a sector that is in transition. All of this indicates that climate policies are also contributing to the rise of national regulatory measures and greater protectionism, which is reshaping global trade. This more protectionist international trade environment could pose problems for companies that depend on foreign markets, especially in Europe and Asia. The rise of export restrictions and protectionism is making geostrategic alliances between like-minded countries increasingly important in a highly fragmented world. Proof of this is the agreement established between the US and Japan, the possible agreement between the EU and the US, the future agreement between the US and India, the US action plan with Indonesia, and the "critical raw materials club." The supply risks could be further amplified if some of the countries rich in raw materials decide to form cartels. At present, it cannot be ruled out that some countries will create a raw materials cartel similar to the one proposed by the EU, which aims to obtain critical raw materials from "trusted partners willing to develop their own critical raw materials industries[128].

Supply risks could be further amplified if some of the raw material-rich countries decide to form cartels. At present, it cannot be ruled out that some countries will create a raw materials cartel similar to OPEC. In fact, Argentina, Chile, and Bolivia, members of the lithium triangle,

[127] Wischer, G., & Bazilian, M. (2024). The rise of great mineral powers. Journal of Indo-Pacific Affairs, 7(2).
[128] Regueiro, M., & Alonso-Jiménez, A. (2021). Minerals in the future of Europe. Mineral Economics, 34(2), 209–224.

have been discussing this concept since July 2022. Russia has also expressed the suitability of creating an OPEC-style platform for solid minerals[129].

The rise of nationalism also poses a risk to critical mineral markets. For example, Bolivia has included lithium in its constitution as a strategic resource, while in Mexico, President López Obrador declared Mexico's lithium deposits national property in 2022, establishing a state-owned company, LitioMx. In line with this trend, policies to accelerate nationalization have continued in 2023. In Chile, the ownership of the lithium industry is being debated, and the creation of a state-owned lithium company, similar to the one that already exists for copper, cannot be ruled out. From a diplomatic point of view, some countries are establishing new alliances and partnerships to ensure access to these critical mineral resources. As part of the EU's Raw Materials Strategy, priority has been given to diplomacy, establishing strategic partnerships and political dialogues with third countries to ensure access to raw materials in global markets[130]. Both the US and the EU are pursuing diplomatic initiatives to build better strategic partnerships in Africa in order to strengthen their supply chains. These initiatives aim to unseat China's deep presence in Africa. In contrast to China's purely extractive policies on the continent, the US and the EU offer a more attractive model of partnership that aims to generate economic development in mineral-rich African countries. Africa is thus becoming a crucial partner for the US and the EU in the geopolitical configuration of the 21st century[131].

As highlighted in the analysis by Cristina Grieco and Alessandro Rosanò, over several decades the EU has emphasized the strategic importance of secure supplies of raw materials for large developed economies, at least since the energy crisis of the early 1970s. Indeed, it is impossible to underestimate the centrality of critical raw materials for technological, industrial, and strategic sectors, without at the same time highlighting how they are constantly subject to supply risks.

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[129] Allianz Trade. (2023, July 26). Le materie prime critiche: il ruolo della transizione energetica, il quadro geopolitico mondiale e il ruolo dell'Europa. Allianz Trade. https://www.allianz-trade.com/it_IT/news-e-approfondimenti/studi-economici/pubblicazioni-economiche/criticita-materie-prime.html

[130] Wischer, G., & Bazilian, M. (2024). The rise of great mineral powers. Journal of Indo-Pacific Affairs, 7(2). Abbas, S., et al. (2024). The contribution of resource-based taxation, green innovation, and minerals trade toward ecological sustainability in resource-rich economies. Resources Policy, 93, 105092.

[131] Valverde-Carbonell, J., Pietrobelli, C., & Menéndez, M. de las M. (2024). Minerals' criticality and countries' mining competitiveness: Two faces of the same coin. Resources Policy, 98, 105359.

In this context, the EU in particular is heavily dependent on international imports, especially for materials such as rare earths, lithium, cobalt, etc. It is above all the green and digital transition (commonly referred to as the 'Twin Transition'), to which the Union has recently committed itself, that requires increasing use of these resources, forcing the bloc to adopt common strategies. Against this backdrop, Regulation (EU) 2024/1252 (Critical Raw Materials Act – CRMA) was specifically designed to ensure secure and sustainable access to these types of resources. The CRMA therefore sought to promote in various ways extraction, processing, and recycling activities within the Union in order to drastically reduce the levels of dependence of Union members on third countries. The instrument therefore set very ambitious targets to be achieved by 2030: at least 10% internal extraction, 40% EU processing, and 25% recycled raw materials. The concept of 'strategic' raw materials is therefore introduced, which are defined as priority materials for the overall industrial security of the Union, while at the same time providing for strategic projects to ensure accelerated authorizations and financial support. In this direction, the EU Commission has therefore decided to take a central role in monitoring and evaluating the initiatives presented with these objectives, incorporating the regulation into the Industrial Green Deal and equipping it with a series of other legislative instruments. In this complex strategy, the European Committee on Critical Raw Materials has been tasked with coordinating efforts between the Commission and Member States, while the CRMA is responsible for promoting practices considered sustainable in terms of human rights, including in supplier countries. The circular economy plays a particularly central role in waste recovery and waste reduction, in a context where the regulation encourages external cooperation by establishing a series of strategic partnerships with third countries, with the aim of ensuring mutual benefits, environmental sustainability, and increased levels of transparency.

However, there are numerous complex issues, particularly the risk of competition between Member States and significant reservations regarding sustainability, also considering that the CRMA could come into conflict with other EU objectives, in particular environmental protection and global justice. These critical issues call for the greatest possible consistency between internal policies and the external dimension of raw material supply, within a

regulatory framework in which the regulation marks a fundamental step forward but needs further coordinated additions. [132]

[132] Grieco, C., & Rosanò, A. (2024). Il Critical Raw Materials Act e la sostenibilità ambientale: Non è tutto "oro" quel che luccica? Quaderni AISDUE – Rivista quadrimestrale (ISSN 2975-2698).

CHAPTER THREE – *The Democratic Republic of the Congo as the world's main cobalt supplier: the national regulatory framework and international initiatives for a responsible supply chain*

SUMMARY: 3.1. Cobalt reserves in the DRC and their importance in the global market. – 3.2. Uses of cobalt and the different players involved in its extraction: multinational operators and government agencies. – 3.3. Analysis of treaties and international regulations governing the export of cobalt from the DRC. – 3.4. Child labour and human rights in cobalt mines: obligations of the Democratic Republic of the Congo under international, regional and national law and the protection of minors.

This part of the thesis focuses on the role of the Democratic Republic of Congo in the global cobalt market, highlighting its central role in the trade of a resource that appears to be increasingly strategic for both the energy transition and new technologies. It therefore examines the roles and characteristics of those involved, the geopolitical dynamics, and the critical issues underlying the dynamics related to the extraction of the mineral. A specific section is dedicated to the various national and international regulatory frameworks that have set themselves the goal of regulating the supply chain and limiting the dramatic social and environmental impacts.

3.1. Cobalt reserves in the DRC and their importance in the global market

While oil was used as fuel for cars and airplanes during the first half of the 20th century, over time products such as plastic, PVC, silicone, domestic cooking gas, and even petroleum-based fumigants were created[133]. Today, we recognize how much this led to dependence on oil and wars over the monopoly of its sale and extraction. As a result, large investment companies have sought alternative fuel sources to generate and store energy. Among these, rechargeable

[133] Évora, I., & Frias, S. (2024). Livro das comunicações apresentadas no In Progress 3 com revisão por pares – 15 a 16 de novembro de 2018 no ISEG/ULisboa. CEsA – Centro de Estudos sobre África e Desenvolvimento: Koyamparambath, A., et al. (2022). Supply risk evolution of raw materials for batteries and fossil fuels for selected OECD countries (2000–2018). Resources Policy, 75, 102465.

lithium-ion batteries have been promoted in the last decade. These batteries are made from cobalt, nickel, and aluminum, minerals that, together, have the capacity to store large amounts of energy for many hours. Of particular importance in this group is cobalt, whose use was invented by Akira Yoshino in 1985, because it replaces the lithium metal that corroded the battery, providing greater durability, safety, and stability for energy storage[134]. Lithium-ion batteries are so powerful that they can keep a car running for 400 kilometers, which is why they are marketed as a substitute for gasoline-powered cars. Since they do not use petroleum, electric cars with lithium-ion batteries are marketed as clean energy or green energy. The same is true of cobalt, nickel, and manganese batteries, which are effective at keeping an entire home powered for several hours, replacing dependence on electricity from large hydroelectric plants[135].

Cobalt is obtained as a by-product of copper and nickel mining. Only Morocco produces cobalt from primary ore, accounting for 1 to 2% of the world total. About 38% comes from nickel extraction and 60% from copper (notably from the DRC, formerly Zaire). In Brazil, cobalt is obtained from nickel production in the Niquelândia and Barro Alto mines (Votorantim) in Goiás (GO) and processed at the São Miguel Paulista industrial plant (SP), which has been shut down since 2016 due to low nickel prices. The Fortaleza de Minas mine (MG), also owned by Votorantim, produced cobalt as a by-product until 2013. Prometálica, which produces nickel/cobalt in Americano do Brasil (GO), has also halted operations. The largest cobalt producers in the world are Glencore, ERG (Eurasian Resources Group), Norilsk, China Molybdenium, and Vale (producing around 6,000 tons per year in Canada). China, in turn, has a dominant position in the cobalt refining production chain, producing around 80% of the cobalt salts needed for lithium-ion batteries. The direct consequence of Chinese dominance is the need for North American, Asian, and European automakers to sign supply contracts to ensure their

[134] Yoshino, A. (2012). The birth of the lithium-ion battery. Angewandte Chemie International Edition, 51(24), 5798–5800.

[135] Évora, I., & Frias, S. (2024). Livro das comunicações apresentadas no In Progress 3 com revisão por pares – 15 a 16 de novembro de 2018 no ISEG/ULisboa. CEsA – Centro de Estudos sobre África e Desenvolvimento

production of batteries for electric vehicles, at risk of shortages, vulnerability, and China's strong monopoly[136].

3.2. *Uses of cobalt and the different players involved in its extraction: multinational operators and government agencies*

The so-called "Energy Transition" has positioned mining as a strategic economic activity because minerals—such as lithium, copper, zinc, and rare earths, among others—are key inputs for electrification and electric mobility. For example, iron, aluminum, copper, manganese, and molybdenum are needed to manufacture wind turbines. Lithium and nickel are essential inputs for rechargeable batteries. At the same time, copper is fundamental for increasing electrification or electromobility. In this regard, there is no single definition of critical minerals, as they vary according to the interests and criteria of each country[137].

However, this concept, in its various forms, usually highlights its critical importance for the development of an industry or sector, for which a continuous and secure supply is essential. From the perspective of consumers and export destinations of critical minerals, there are two central issues: 1) how and where these minerals are produced for their industries, and 2) how vulnerable their supply chains are. Thus, the supply of these minerals, which are essential for green industries, becomes a point of tension and destabilization in geopolitical terms, especially for two reasons: 1) the current production of many energy transition minerals is more geographically concentrated than that of oil or natural gas; and 2) the level of concentration is equally high in the supply chain, with China's dominance being particularly noteworthy[138]. At the same time, the US does not have its own critical resources, which makes supply even more problematic given its imperative to monopolize and lead the Energy Transition. As a result, a de facto war is raging over these critical minerals with the aim of controlling supply. With

[136] Heider, M. Perspectivas do cobalto. https://www.inthemine.com.br/site/wp-content/uploads/2018/11/ITM75mercado.pdf

[137] Tepox Vivar, Á., et al. (2024). La importancia estratégica de los minerales para lograr los objetivos de descarbonización. In El carácter geopolítico de la energía y sus rutas de transporte en el contexto de la transición energética (Vol. I, pp. 171–).

[138] International Energy Agency. (2023). World energy outlook 2023. IEA.

China making great strides in the field of renewable energy, the US has decided to pursue various geopolitical destabilization strategies to appropriate these resources or, failing that, to prevent China from using them. For this reason, on the African continent—but also in other regions—one of Washington's strategies has been to finance and create specialized groups to destabilize countries. This provides a pretext to justify the interference of powers interested in minerals. Through the discourse of terrorism, particularly jihadist groups, the African continent has been turned into veritable battlefields, especially where the main deposits of critical minerals are located.[139]

It is well known that the exploitation of mineral, agricultural, and energy resources in Africa has not led to development. On the contrary, it has brought human suffering, poor governance, corruption, coups, wars, and environmental degradation. The wars that have taken place in the DRC, for example, since its independence in 1960 to the present day, particularly the armed conflicts of the last three decades (1996-1997; 1998-2003; 2004-2014), have had a significant ethnic-economic dimension. Africa's rentier economies have not eradicated poverty and hunger on the continent, but they have enriched external actors, particularly multinational mining and energy companies, as hunger is on the rise in almost all African regions, making Africa the region with the highest proportion of undernourishment, at around 20 percent[140].

Many authors and international observers rightly denounce the fact that African forests and, by extension, the continent's natural resources are being plundered and destroyed, with the consequent irreversible deterioration of the ecosystem and irreplaceable green capital. Fortunately, there is a stronger environmental awareness or environmental criticism among civil society, which is increasingly demanding transparency from multinational mining and oil companies and local governments, often complicit and committed to neoliberalism, which destroys ecosystems, as well as the repayment of foreign debt. Some argue that this model is not only ecocidal but also generates inequalities between and within countries. In Africa, the extractive industry must be combined with the mineral and energy resource processing

[139] Tepox Vivar, Á., et al. (2024). La importancia estratégica de los minerales para lograr los objetivos de descarbonización. In El carácter geopolítico de la energía y sus rutas de transporte en el contexto de la transición energética (Vol. I, pp. 171–).

[140] Koyamparambath, A., et al. (2022). Supply risk evolution of raw materials for batteries and fossil fuels for selected OECD countries (2000–2018). Resources Policy, 75, 102465.

industry, together with the agricultural raw material valorization industries and light export industries. Development based on internal investment of external resources from the valorization and export of natural resources (agro-export or agro-pastoral model), initially experimented with by state capitalism, failed to reduce the inequalities that often accompany it, as experienced by Kenya, Ghana, and Côte d'Ivoire. In other words, the financing of agricultural and industrial development (successful basic industrialization) must be supported by a social policy of internal income redistribution and access for the majority to capital accumulation[141].

However, the concept of clean energy in particular can be questioned if we analyze how cobalt is extracted. Canaccord-Genuity is a mega-corporation that advises other companies on the most lucrative transactions in key growth sectors of the global economy. To this end, it offers comprehensive research on how a resource is extracted, circulated, and consumed, so that its clients can obtain the greatest economic return on their investment. Due to the recent demand for rechargeable batteries, Canaccord has conducted studies on cobalt mining. Among its findings is that, by 2016, 56% of the cobalt consumed came from the DRC[142] and that 54% of the world's reserves of this mineral were located in that country[143]. It also concludes that the rapid growth in electric car manufacturing will increase demand for cobalt by 92% by 2025 and raise the price of cobalt from $24 per pound in 2017 to $34 per pound by 2025. However, it warns of the growing risk of investing in the extraction of this mineral, due to the precarious working conditions and political instability in the DRC[144].

Canaccord is not interested in protecting human rights, but in warning its clients that investment is risky. And, although it is unacceptable that corporations should express such a serious social problem with such cold indifference, what we seek to demonstrate is that the imbalance in the social dynamics related to cobalt mining in the DRC will ultimately affect even the mega-

[141] Li, Y., Huang, J., Zeng, A., & Zhang, H. (2024). Trade risk transmission of the global cobalt industrial chain based on a multi-layer network. Resources Policy, 98, Article 105338.

[142] Huber, S. T., & Steininger, K. W. (2022). Critical sustainability issues in the production of wind and solar electricity generation as well as storage facilities and possible solutions. Journal of Cleaner Production, 339, Article 130720.

[143] Amnesty International. (2016). Democratic Republic of Congo: “This is what we die for” – Human rights abuses in the Democratic Republic of the Congo power the global trade in cobalt.

[144] Cobalt Blue Holdings Limited. (2022, April). The cobalt market: 2022–2030F (Report).

corporations that seek to exploit it. Cobalt is obtained as a by-product of copper and nickel mining, and in the DRC this activity is carried out through artisanal mining, using methods that are dangerous to the human body, extracting cobalt sulfide in high concentrations before washing, sorting, and packaging it[145].

In 2016 and 2017, Amnesty International presented two reports denouncing the constant abuse of human rights in artisanal cobalt mining in the DRC. Among them, it highlighted alarming aspects: widespread child labor, forced displacement of entire communities to expand mines, precarious working conditions, no social security, and multiple diseases resulting from the way cobalt is extracted, without any medical or social care to attend to the numerous cases that arise[146][147].

The influence and interests of the Canadian mining industry in the Democratic Republic of Congo are particularly significant: 70% of Congolese mining companies raise capital in Canada, and 30% of the large mining companies operating in Congo are Canadian (e.g., Barrick, Ivanhoe, Banro, Tantalex, Kamoa, Kico, and Alphamines). In addition, Canadian companies have been present in Congo since 1995 and have had a significant environmental and social impact on the country, which persists even after their departure, as in the case of Lunding (TFM), Katanga Mining (Glencore), First Quantum (ANVIL, COMISA) and SOMIKA. Canada is a mining country of great local and global importance. The extractive industry contributes about 4% of Canada's gross domestic product[148].

In 2020, the sector contributed $107 billion to Canada's nominal gross domestic product, employed 377,000 direct workers, and created 315,000 indirect jobs. Canadian mining companies are present in 100 countries around the world. Toronto and Vancouver are hubs for global mining exploration and financing. Government policies on corporate social

[145] Lewicka, E., Guzik, K., & Galos, K. (2021). On the possibilities of critical raw materials production from the EU's primary sources. Resources, 10(5), Article 50.

[146] Évora, I., & Frias, S. (2024). Livro das comunicações apresentadas no In Progress 3 com revisão por pares – 15 a 16 de novembro de 2018 no ISEG/ULisboa. CEsA – Centro de Estudos sobre África e Desenvolvimento..

[147] Lewicka, E., Guzik, K., & Galos, K. (2021). On the possibilities of critical raw materials production from the EU's primary sources. Resources, 10(5), Article 50.

[148] Li, Y., Huang, J., Zeng, A., & Zhang, H. (2024). Trade risk transmission of the global cobalt industrial chain based on a multi-layer network. Resources Policy, 98, Article 105338.

responsibility and ethical behavior are deeply influenced by pressure from the mining industry. The policies that currently govern due diligence and the behavior of international companies are voluntary. As a result, there is little or no accountability for Canadian companies operating abroad. However, some companies have been accused of human rights violations and environmental damage so egregious that the international community has brought them to the attention of the Canadian government. Canadian companies are mostly interested in strategic minerals, and some of them rely on child labor. The extraction of these minerals is linked to rebels and armed groups, human rights violations, sexual abuse against women and children, and environmental damage.[149]

As the use of green technologies increases, demand for these minerals, which are already used in certain production processes, will drive their exploitation. This has several consequences, including greater competition to secure supplies for various industries that need them for their development. Secondly, at the geopolitical level, it means greater belligerence and destabilization at the global level. In this regard, the estimated global reserves and resources of these minerals are distributed unevenly around the world. In addition, the supply chain is equally concentrated, with China standing out for its dominance in the processing of these minerals. As the location and exploitation of these minerals is restricted to only a few countries, the effects of a restriction on supply would have serious repercussions on the defense, energy, high-tech, and medical sectors. Furthermore, the US is not in a favorable position in this competition, as it is largely a net importer of these resources[150].

The role of China, as said, is pivotal. Economic and political instability in the DRC must be linked to mining, especially cobalt, coltan, and gold. This mining is carried out using artisanal methods and in deplorable conditions[151]. In the first two cases, this makes sense, as it is the only way to make mass production profitable: coltan is used to make capacitors and has a higher electrical storage capacity than other materials used previously, and is used in all

[149] Segretariato per la Giustizia Sociale e l'Ecologia. (2023). L'attività mineraria: Una fortuna o una rovina? Promotio Justitiae, 135, 84–.

[150] Tepox Vivar, Á., et al. (2024). La importancia estratégica de los minerales para lograr los objetivos de descarbonización. In El carácter geopolítico de la energía y sus rutas de transporte en el contexto de la transición energética (Vol. I, pp. 186–).

[151] Umpula, E., & Bisil, E. (2023, July 25). Formalising artisanal cobalt mining in the DRC: Much work remains. International Institute for Environment and Development.

computer equipment. Cobalt is used to make all kinds of alloys, but is currently used in rechargeable lithium-ion batteries for cell phones and laptops and will be essential in electric cars, which China is targeting (only Tesla in Nevada has an alternative project). Both minerals are a substantial part of the value chain of these devices, with Chinese hegemony. In the case of cobalt, Zhejiang Huayou Cobalt is the Chinese company that has become the largest buyer and supplies almost all of the world's largest battery manufacturers. This specialization and the place of human resources in the global value chain explain the working conditions and income levels, but Amnesty International has also been publishing reports on the use of children in the mines, and in its latest report it mentioned the government's efforts to prevent these situations. Who are the players in mining in the DRC? In the cobalt and copper sector, Tenke Fungurume Mine stands out, a joint venture between Freeport McMoran Copper & Gold Inc. of the US (56%), Lundin Mining Corp. of Canada (24%), and the state-owned Gécamines (20%). The majority stake in this company was acquired by Molybdenum of China in 2017. In 2012, Anvil Mining of Australia was acquired by MMG Ltd., also of China. Next is Mutanda Mining SPRL, in which Swiss company Glencore Xstrata holds a majority stake (69%) and Fleurette Properties Ltd. holds 31%. Then there is Katanga Mining Ltd. of Canada and Boss Mining, a joint venture between Eurasian Natural Resources Corp. Ltd. (ENRC) of the UK with 70% and Gécamines with 30%, followed by Société d'Exploitation de Kipoi (Tiger Resources of Australia with 60% and Gécamines with 40%) and Jinchuan Group of China. China is also present with Congo Dong Fang International and Congo Loyal Will Mining SPRL of Hong Kong. Finally, Gécamines has several mines that it operates on its own or with various companies. As can be seen, the activity is currently led by Chinese, Canadian (with distant American origins), UK, and Australian companies, along with the famous Swiss company Glencore and the state-owned company Gécamines. In which mines are the conditions mentioned above found? Naturally, the logic behind the exploitation of natural resources is based on low wages, and no company escapes this logic. The official websites do not mention any particular policy that allows companies to differentiate themselves from the rest in terms of working conditions.[152] Given China's dominance, the US and its European allies intend to

[152] Narodowski, P. (2018). China en África: El caso de la República Democrática del Congo. In I Jornadas Platenses de Geografía (17–19 de octubre de 2018). Universidad Nacional de La Plata, Facultad de Humanidades y Ciencias de la Educación, Departamento de Geografía.

expel it from the African continent and undermine its position in the supply chain for critical minerals. One of the strategies consists of economic and political control of African countries. At the same time, the fight against jihadist groups located on the African continent is being used to justify military intervention and thereby pave the way for control of these deposits. Therefore, in various parts of the continent—the Congo, as well as Zambia and Rwanda—red flags are beginning to appear. This is because, in these areas, first of all, deposits are shared, and internal disputes are fueled by the potential benefits of exploiting these resources[153].

In addition, countries that share military borders can become pivots that allow control over access to these resources. Secondly, the Chinese initially came to the region to do business, but with the rise of electromobility under the dominance of the US and its allies, this has turned into a real dispute. Washington has arrived on the African continent to fight for the market and has no qualms about unleashing violence and instability to get hold of these strategic minerals and drive China out of Africa. It can also be observed that the hoarding of critical minerals not only has a trade war aspect, to improve the US's position in supply chains, but also has a military character[154][155]. The US and its allies, through the jihadist groups they finance, have as their main objective military occupation and, with it, effective and economic control over critical mineral deposits, further exacerbating the problems of the African continent. Thus, the Energy Transition has been presented as the panacea for the world's current problems. Through various mechanisms and global bodies, attempts have been made to impose a narrative of fighting global warming, similar to the fight against terrorism, in which environmental objectives will alleviate various problems worldwide. On the contrary, environmental problems are used as a tool to give Capital a second wind and, at the same time, to legitimize its geopolitical agenda. Therefore, seemingly political problems, such as coups d'état or lack of representation, are in fact geopolitical in nature. As a result, a new era of violence and

[153] Lewicka, E., Guzik, K., & Galos, K. (2021). On the possibilities of critical raw materials production from the EU's primary sources. Resources, 10(5), Article 50.

[154] Tepox Vivar, Á., et al. (2024). La importancia estratégica de los minerales para lograr los objetivos de descarbonización. In El carácter geopolítico de la energía y sus rutas de transporte en el contexto de la transición energética (Vol. I, pp. 186–).

[155] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.

destruction is dawning on the African continent in the name of Green Energy and the fight against China.[156]

3.3. *Analysis of laws, treaties and international regulations governing the export of cobalt from the DRC*

At the international level, the issue of conflict minerals and their role in fueling armed conflict has progressively attracted the attention of multilateral institutions, particularly the United Nations. In this context, the United Nations Security Council (UNSC) adopted Resolution 1952 in 2010 in response to the persistent instability in the Democratic Republic of the Congo (DRC). The Resolution reiterates the Council's concern regarding the presence of armed groups in the eastern regions of the country, including the Democratic Forces for the Liberation of Rwanda operating in the Kivu provinces, whose activities significantly contribute to regional insecurity and violence.[157]

When the United Nations Security Council (UNSC) "securitizes" a specific issue, it formally acknowledges that such an issue constitutes a threat to international peace and security, thereby justifying the adoption of measures under Chapters VII and VIII of the United Nations Charter. These measures often concern the regulation of arms flows, transportation routes, and financial resources linked to both State and non-State actors.[158] Resolution 1952 follows this logic by explicitly addressing the illicit exploitation and trade of natural resources, recognizing that the relationship between illegal mineral extraction, illicit trade, and the trafficking of arms

[156] Tepox Vivar, Á., et al. (2024). La importancia estratégica de los minerales para lograr los objetivos de descarbonización. In El carácter geopolítico de la energía y sus rutas de transporte en el contexto de la transición energética (Vol. I, pp. 186–).

[157] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.

[158] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.

represents one of the principal factors exacerbating conflicts in the Great Lakes region of Africa.[159]

Within this framework, Resolution 1952 seeks to respond to widespread and systematic human rights violations affecting the Congolese civilian population, including killings, forced displacement, the recruitment and use of child soldiers, and extensive sexual violence. The connection between conflicts over mineral resources and acts of sexual violence is well documented, with such violence often characterized by extreme brutality and used as a strategy of war.[160] These violations not only undermine human security in the DRC but also pose broader risks to regional and international stability.[161]

A particularly innovative element of Resolution 1952 is contained in paragraphs 7 to 9, which for the first time explicitly refer to the responsibility of actors involved in mineral supply chains from conflict-affected and high-risk areas. These provisions call upon individuals and entities participating in such supply chains to demonstrate that they have exercised due diligence in order to avoid providing direct or indirect support to illegal armed groups.[162]

Traditionally, the concept of due diligence in international law referred to the obligation of States to prevent harm within their territory, whether to their own populations or to other States. Over time, however, due diligence has evolved into a more flexible and progressive standard. It is now understood either as a standard of conduct necessary to fulfill a legal obligation—entailing measures such as investigation and prosecution—or as a structured process through which companies manage and mitigate risks generated by their activities.[163] Importantly, due

[159] Martínez San Millán, C. (2020). Las diferentes iniciativas sobre diligencia debida en la cadena de suministro de minerales de zonas de conflicto y de alto riesgo: ¿existen alternativas viables más eficaces? Estudios Internacionales (Santiago), 52(197), 121–151.
[160] Martínez San Millán, C. (2020). Las diferentes iniciativas sobre diligencia debida en la cadena de suministro de minerales de zonas de conflicto y de alto riesgo: ¿existen alternativas viables más eficaces? Estudios Internacionales (Santiago), 52(197), 121–151.
[161] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.
[162] Martínez San Millán, C. (2020). Las diferentes iniciativas sobre diligencia debida en la cadena de suministro de minerales de zonas de conflicto y de alto riesgo: ¿existen alternativas viables más eficaces? Estudios Internacionales (Santiago), 52(197), 121–151.
[163] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.

diligence obligations are no longer imposed exclusively on States through international treaties or domestic legislation, but increasingly extend to non-State actors, particularly multinational enterprises, which are expected to comply with internationally recognized standards of responsible business conduct, including the United Nations Guiding Principles on Business and Human Rights.[164][165]

Despite its growing prominence, the concept of due diligence has been widely criticized. Dhooge highlights the vagueness of the concept and the absence of an explicit obligation to conduct human rights impact assessments, arguing that such ambiguity may allow multinational corporations to evade meaningful accountability. Similarly, Lambooy maintains that due diligence operates primarily as a preventive obligation rather than as a clear basis for liability. More broadly, critics emphasize the persistent lack of conceptual precision and the difficulty of objectively demonstrating compliance with the required standard of conduct.[166] In response, due diligence in mineral supply chains has increasingly been reconceptualized as a holistic framework aimed at ensuring transparency and traceability from extraction to final consumption, thereby moving beyond conventional risk-management approaches.[167]

Building on the principles set out in UNSC Resolution 1952, paragraph 8 of the Resolution calls upon States to promote awareness of due diligence guidelines and to encourage all actors involved in mineral supply chains to apply these standards or equivalent ones. In response, several international organizations and States have developed initiatives designed to operationalize due diligence in conflict-affected and high-risk areas. Among these initiatives, the OECD Guidelines for Multinational Enterprises, originally adopted in 1976 and revised in

[164] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.

[165] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.

[166] Martínez San Millán, C. (2020). Las diferentes iniciativas sobre diligencia debida en la cadena de suministro de minerales de zonas de conflicto y de alto riesgo: ¿existen alternativas viables más eficaces? Estudios Internacionales (Santiago), 52(197), 121–151.

[167] Martínez San Millán, C. (2020). Las diferentes iniciativas sobre diligencia debida en la cadena de suministro de minerales de zonas de conflicto y de alto riesgo: ¿existen alternativas viables más eficaces? Estudios Internacionales (Santiago), 52(197), 121–151.

2011, establish non-binding principles and standards for responsible business conduct at the global level.[168]

More specifically, the OECD published the *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas* in 2011, with its most recent edition dating from 2016. The development of the Guidance involved a broad range of stakeholders, including OECD member States, the International Conference on the Great Lakes Region, industry representatives, civil society organizations, and the United Nations Group of Experts on the DRC.[169] The Guidance constitutes the first government-supported, multi-stakeholder initiative aimed at preventing mineral extraction and trade from contributing to armed conflict, human rights abuses, and insecurity.[170] However, the OECD explicitly states that compliance with the Guidance is voluntary and non-binding, which significantly limits its effectiveness.[171]

Moreover, both the OECD Guidance and Regulation (EU) 2017/821 limit their material scope to tin, tantalum, tungsten, and gold, excluding other strategically significant minerals such as cobalt.[172] As international law increasingly engages with complex global supply chains, due diligence has emerged as a central regulatory tool aimed at breaking the link between the illegal exploitation of mineral resources, illicit trade, and the perpetuation of armed conflict.[173]

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[168] Xu, L., Guo, X., Xu, M., Zhang, Y., & Li, Y. (2024). Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Scientific Reports, 14, Article 12165.

[169] David, M., Lyth, S. M., Lindner, R., & Harrington, G. F. (2021). Critical raw materials. In Future-proofing fuel cells: Critical raw material governance in sustainable energy (pp. 15–33).

[170] Martínez San Millán, C. (2020). Las diferentes iniciativas sobre diligencia debida en la cadena de suministro de minerales de zonas de conflicto y de alto riesgo: ¿existen alternativas viables más eficaces? Estudios Internacionales (Santiago), 52(197), 121–151.

[171] Organisation for Economic Co-operation and Development. (2016). OECD due diligence guidance for responsible supply chains of minerals from conflict-affected and high-risk areas (3rd ed.). OECD Publishing.

[172] European Union. (2017). Regulation (EU) 2017/821 of the European Parliament and of the Council of 17 May 2017 laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas. Official Journal of the European Union.

[173] Organisation for Economic Co-operation and Development. (2016). OECD due diligence guidance for responsible supply chains of minerals from conflict-affected and high-risk areas (3rd ed.). OECD Publishing.

Against this international backdrop, national initiatives have also played a pivotal role, most notably in the United States. In 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act introduced the legal concept of "conflict minerals" through Section 1502, requiring companies to trace the origin of minerals used in their products, particularly those sourced from the DRC. The minerals covered include columbite-tantalite (coltan), cassiterite (tin), gold, wolframite (tungsten), and their derivatives. Following the adoption of this legislation and reports by organizations such as Amnesty International, corporate scrutiny intensified, compelling companies such as Tesla and Apple to account for the provenance of their mineral inputs.[174]

However, the implementation of the Dodd-Frank Act has faced significant challenges. In 2012, the State National Bank of Big Spring challenged the constitutionality of Section 1502, arguing that it conferred excessive regulatory power on the federal government. Subsequently, in 2017, the Trump administration suspended its application for two years and sought to weaken its enforcement. Empirical evidence suggests that the Act may have generated unintended consequences, including increased gold smuggling and heightened insecurity in mineral-rich regions of the DRC.[175]

These outcomes must be understood within the broader historical and structural context of the DRC, characterized by the legacy of extreme labor exploitation under Belgian colonial rule, post-independence political instability marked by the assassination of Patrice Lumumba, the authoritarian regime of Mobutu Sese Seko, and the spillover of the 1993 Rwandan inter-ethnic conflict into eastern DRC.[176]

Finally, in light of the limitations of existing due diligence frameworks, alternative regulatory approaches have been proposed. One such approach is the establishment of a certification mechanism similar to the Kimberley Process Certification Scheme (KPCS) for rough

[174] Martínez San Millán, C. (2020). Las diferentes iniciativas sobre diligencia debida en la cadena de suministro de minerales de zonas de conflicto y de alto riesgo: ¿existen alternativas viables más eficaces? Estudios Internacionales (Santiago), 52(197), 121–151.
[175] Évora, I., & Frias, S. (Eds.). (2024). Livro das comunicações apresentadas no In Progress 3 com revisão por pares – 15 a 16 de novembro de 2018 no ISEG/ULisboa. CEsA – Centro de Estudos sobre África e Desenvolvimento.
[176] Évora, I., & Frias, S. (Eds.). (2024). Livro das comunicações apresentadas no In Progress 3 com revisão por pares – 15 a 16 de novembro de 2018 no ISEG/ULisboa. CEsA – Centro de Estudos sobre África e Desenvolvimento.

diamonds. The KPCS represents a multilateral response to a global problem and has been widely regarded as relatively effective in limiting the capacity of the illicit diamond trade to finance armed groups responsible for serious human rights violations.[177]

[177] Haufler, V. (2009). The Kimberley Process Certification Scheme: An innovation in global governance and conflict prevention. Journal of Business Ethics, 89(Suppl. 4), 403–416.

CHAPTER FOUR – The importance of international mineral certification: its objectives and application to the case of the Democratic Republic of the Congo

SUMMARY: 4.1. The US Dodd-Frank Act and the due diligence obligation for companies – 4.2. European Union initiatives and regulations regarding critical minerals – 4.3. The difficulty in applying international regulations at a local level: the responsibility of companies and the complicity of local governments – 4.3.1. The existence of small mines and the difficulty of enforcing rules and regulations, rights and certifications in the Congo

This part of the thesis examines the role of international mineral certification as a key instrument for promoting legality, transparency, and respect for human rights within global mineral supply chains. It analyses the main regulatory initiatives adopted at the international and regional levels, with particular attention to United States and European Union frameworks concerning due diligence obligations for companies. The chapter explores the objectives and mechanisms of these regulatory instruments, as well as the challenges related to their implementation in producing countries. Specific attention is devoted to the difficulties of enforcing certification schemes at the local level, highlighting the responsibilities of companies and the role of local governments in addressing social, environmental, and governance-related shortcomings.

4.1. *The US Dodd-Frank Act and the due diligence obligation for companies*

The limits within which companies' responsibilities lie have gradually expanded. The need to think beyond internal processes and along supply chains has prompted governments to adopt a more responsible approach to protect the environment, consumers and human rights around the world.[178][179] As a result, companies must now comply with a growing number of laws requiring

[178] Jones, V. (2012, July 26). L'impatto sulle aziende europee del Dodd-Frank Act. Farnell element14.
[179] Sovacool, B. K. (2019). The precarious political economy of cobalt: Balancing prosperity, poverty, and brutality in artisanal and industrial mining in the Democratic Republic of the Congo. The Extractive Industries and Society, 6(3), 915–939.

them to provide accurate and detailed information about product safety, design processes and procedures, and the materials used. However, ensuring compliance with these standards involves a significant increase in costs and time for companies. Companies that do not meet the regulatory requirements in force are subject to heavy legal fines, which can also cause irreparable damage to their reputation in the market. The United States has passed the *'Dodd-Frank Wall Street Reform and Consumer Protection Act'*, which, among other regulations, regulates and prevents trade in 'conflict minerals', the proceeds of which finance armed conflicts in the Democratic Republic of Congo[180]. From January 2012, companies listed on the US stock exchange will have to subject their supply chains to strict controls in order to verify the origins of tungsten, tantalum, tin and gold (and derivatives) in the products they manufacture. Given the importance of the electronics sector in the US, this requirement will certainly affect European companies. The Dodd-Frank Act, signed by President Obama in July 2010, was drafted to correct corporate behaviour following the financial crisis and scandals that erupted in the second half of the last decade. With over 2,000 pages of regulations, the Dodd-Frank Act has a very broad scope and also addresses the issue of "conflict minerals", i.e. minerals originating in the Democratic Republic of Congo and neighbouring states.[181][182] The area is rich in tin, tantalum, tungsten and gold, raw materials potentially worth hundreds of millions of dollars. However, the profits from some mining operations, often run by armed militias guilty of serious human rights abuses, appear to be used to finance local armed conflicts. Various attempts to prevent such abuses are supported by numerous organisations, including the Enough Project, the work of groups such as Friends of the Congo, and other legitimate mining initiatives carried out by local companies operating in the sector, such as Kalminco, which was founded thanks to a number of cooperatives. Without wishing to penalise the non-conflict-related mining sector, which creates jobs and sustainable development, the

Usilab (2020), 'Congo, Democratic Republic of the, moderate advancement'. US Bureau of International Labour Affairs. USA

[180] See also Xu, L., Guo, X., Xu, M. et al. Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Sci Rep 14, 12165 (2024). multi-layer network, Resources Policy, Volume 98, 2024, 105338

[181] US Bureau of International Labor Affairs. (2020). Congo, Democratic Republic of the: Moderate advancement. U.S. Department of Labor.

[182] Sovacool, B. K. (2019). The precarious political economy of cobalt: Balancing prosperity, poverty, and brutality in artisanal and industrial mining in the Democratic Republic of the Congo. The Extractive Industries and Society, 6(3), 915–939.

provisions of the Dodd-Frank Act on "conflict minerals" require companies that use these resources in their production processes to draw up detailed reports if they originate from the Democratic Republic of Congo or neighbouring states. It is important to remember, however, that these operations involve costs for companies, both in financial terms and in terms of time. However, the key details of the legislation have yet to be finalised by the SEC, with specific reference to the documentation required to demonstrate compliance and how reports are to be verified. Starting in January 2012, the deadline by which these details must be drawn up, companies will have to start providing compliance and reports in order to produce results by the end of the same year[183].

It was precisely the growing international attention on the extraction, processing and use of 'conflict minerals' in the Democratic Republic of Congo (DRC) and neighbouring countries that prompted the US Congress to enact this fundamental document, with the aim of requiring publicly traded companies that use conflict minerals in their products to disclose the source of those minerals.

The law was enacted in an effort to dissuade companies from continuing to engage in trade in such minerals, which directly or indirectly support regional conflicts. Section 1502 of the law, concerning the sourcing of minerals, designates certain minerals and derivatives as 'conflict minerals' regardless of their place of origin.

'Conflict minerals,' as defined by US law, currently include tantalum, tin, tungsten, and gold, which are derivatives of cassiterite, columbite-tantalite, and wolframite, respectively. Downstream companies often refer to derivatives of these minerals as 3TG.[184].

Companies not directly mentioned in the act may also decide not to take part in the initiative. However, this is difficult to define for major suppliers of electronic components that trade in large quantities of products containing minerals that may be part of 'conflict minerals'. The

[183] Victoria Jones, Farnell element14, L'impatto sulle aziende europee del Dodd-Frank Act, 26 Luglio
[184] Hope Industrial Systems. (2025). *Conformità alla legge sui minerali provenienti da zone di conflitto*. Hope Industrial Systems. Sovacool, B. (2019). 'The precarious political economy of cobalt: balancing prosperity, poverty, and brutality in artisanal and industrial mining in the Democratic Republic of the Congo'. The Extractive Industries and Society. UK.
Usilab (2020), 'Congo, Democratic Republic of the, moderate advancement'. US Bureau of International Labour Affairs. USA

alternative is to intervene with suppliers to verify that they meet the compliance requirements for the use of 'conflict minerals'. However, this is expected to be very difficult, as response times to such requests are generally long, even for other long-standing requirements, such as those of the RoHS Directive; therefore, obtaining a response for 'conflict minerals' is likely to be even more challenging. In the European Union, the current lack of legislation on conflict minerals may be somewhat advantageous for companies hoping to avoid these obligations. While this lack of legislation may be interpreted as reluctance, there is a different view among MEPs that the EU should take more concrete and drastic action to ensure that production lines in Europe are completely free from the use of conflict minerals. The UK Chancellor and Business Secretary raised this issue at the G20 meeting earlier this year. Given the weight of the legislation and the high political pressure surrounding it, the European Union is expected to adopt the same approach in the near future. Companies must decide whether to wait until then or start collecting the relevant data, as consumers are likely to start demanding product information well in advance.

The biggest impact on companies resulting from the conflict minerals laws will be the need to commit resources to collect the required data. Although supply contracts and public image are at stake, data collection represents an extra burden for small and medium-sized enterprises, which are already under pressure from the costly and labour-intensive requirements imposed by various laws and directives, such as CE marking, RoHS, REACH and others. The only certainty arising from the expansion of legislative requirements is that data collection and complete control of the supply chain can no longer be considered additional activities for companies, but require a dedicated resource. Whether or not the Dodd-Frank Act succeeds in having a positive impact in the conflict area of the Democratic Republic of Congo, the US has implemented concrete corrective measures and its influence, at a global level, now places essential obligations on companies operating in the electronics sector. If the legislation receives the expected support from consumers and companies, "conflict-free" status could become a regulatory requirement for product labelling and reporting. While companies in Europe may choose to wait for EU directives, it is clear that the winning move for those trading with US partners would be to implement product control activities immediately. Regardless of the

deadlines, however, it will be necessary to understand whether European companies will have the resources to implement these activities.[185]

With the enactment of the *Dodd-Frank Act*, the US effectively forced many companies to avoid extracting minerals in conflict-affected areas. However, the reform has pushed millions of miners further into poverty, further destabilising the situation. During the first video conference in February 2021 between Tshisekedi and Kamala Harris, the Vice President emphasised the US's concern about serious human rights violations and the worsening humanitarian crisis.

The situation in the DRC is being closely monitored with concern by the European External Action Service, which coordinates the cooperation programmes of EU Member States and monitors the situation in the country. In this context, Italy is actively pursuing its efforts to promote political mediation with a view to finding shared solutions. Territorial integrity, respect for national sovereignty and assistance in supporting the peace process and stability are also France's objectives. On a bilateral and multilateral level, France had committed itself to promoting respect for democracy, human rights and the constitution in order to enable a peaceful resolution of the political crisis that began during Kabila's second term. With the proclamation of Tshisekedi's victory, France encouraged the new Head of State to respond to the population's expectations for change in a spirit of dialogue and consensus.

With regard to the objective of stabilising the government, the Russian Federation has re-established its relations with the country, and Lavrov has expressed his full willingness to contribute to the pacification of the region. The agreements signed in 2018 and 2020, in which Russia committed to supplying weapons and training the security forces engaged in counter-guerrilla operations, are a step in this direction.

The United Nations mission MONUSCO has succeeded in preventing an escalation of the various internal crises, but it has not been able to eradicate the presence of numerous armed

[185] Victoria Jones, Farnell element14, L'impatto sulle aziende europee del Dodd-Frank Act, 26 Luglio 2012; cfr. Radley B., Vogel C., Fighting windmills in Eastern Congo? The ambiguous impact of the 'conflict minerals' movement, The Extractive Industries and Society, Volume 2, Issue 3, 2015, p 406-410

groups or resolve social and institutional problems. The UN project, in its methods and objectives, does not reflect the wishes of the Congolese government, and its excessive neutrality is perceived negatively by local politicians. The importance of the country in all respects – natural resources, demographics, strategic location – thus requires renewed interest from the major powers, which must move beyond the often-predatory approach that has characterised recent years and organise a more solid multilateral commitment, in the interests first and foremost of a population exhausted by decades of internal wars[186][187].

4.2. European Union initiatives and regulations regarding critical minerals

In 2014, the European Union, taking inspiration from the US Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which led to the adoption of rules aimed at implementing disclosure requirements relating to conflict minerals, set itself the ambitious goal of establishing a legislative framework for the EU trade in blood minerals. Unlike the US Dodd Frank Act, however, the European Commission's first proposal, based on a voluntary and non-comprehensive approach, proved weak and ineffective, and was criticised and improved upon by civil society organisations. From March 2014 to June 2016, the legislative process was bumpy and saw heated debate between representatives of institutions, civil society organisations and the business world. On 15 June 2016, the European Union representatives responsible for negotiating the Conflict Minerals Regulation reached a political agreement. While there was a sense of satisfaction among MEPs with the compromise reached, many civil society organisations, including FOCSIV, immediately highlighted the weaknesses of an agreement with many limitations[188].

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[186] Colacchio, M., Gardini, L., Ravagnan, C., & Santo, L. (2021, 16 luglio). *Instabilità e interessi strategici nella Repubblica Democratica del Congo*. *Pandora Rivista*.

[187] Hanai, K. (2021). Conflict minerals regulation and mechanism changes in the DR Congo. Resources Policy, 74, Article 102394.

[188] Finalmente il nuovo regolamento europeo sui minerali dei conflitti il successo – parziale – delle organizzazioni della società civile e dei politici di buona volontà, Febbraio 2017 A cura di Daniela Finamore, Nohemy Graziani, Andrea Stocchiero Ufficio policy FOCSIV, p. 2.

The European market is one of the main consumer targets for companies operating in the electronics industry: Germany, the United Kingdom, the Netherlands and France rank third to sixth in the world in terms of imports of laptops and mobile phones. Italy ranks eleventh in the world and fifth in Europe. With a share of almost 35% of global trade, the EU is one of the largest importers of tin, tantalum, tungsten and gold, in raw or concentrated form. In March 2014, the European Commission presented a proposal for a regulation aimed at blocking the use of profits from the trade in minerals to finance armed conflicts. The European Union's approach to combating conflict minerals had several objectives: · to identify the root causes of the problem, the actors involved and the dynamics at play; to establish responsible trade in conflict minerals within the European Union; · to increase the capacity of EU operators to comply with due diligence standards and to promote transparency throughout the production and trade chain.[189]

The proposed regulation aimed to establish a voluntary self-certification system for importers of tin, tantalum, tungsten and gold, and their minerals[190]. Self-certification involves following the OECD's due diligence guidelines, but with an additional step requiring information to be passed on to companies further down the supply chain. The proposed regulation also provided that the information transmitted to EU Member States by importers who had self-certified as responsible would be sent to the European Commission, which, on this basis, would draw up, in cooperation with the OECD, a list of responsible smelters and refiners ('White List'). In practice, any mineral importer could self-certify as a responsible importer by declaring to the competent authority of a Member State that it complied with the supply chain due diligence obligations set out in the Regulation. In the event of a breach, the penalty would consist of a

[189] Finalmente il nuovo regolamento europeo sui minerali dei conflitti il successo – parziale – delle organizzazioni della società civile e dei politici di buona volontà, Febbraio 2017 A cura di Daniela Finamore, Nohemy Graziani, Andrea Stocchiero Ufficio policy FOCSIV, pp. 4 e ss.,; cfr. Xu, L., Guo, X., Xu, M. et al. Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Sci Rep 14, 12165 (2024).
Yingli Li, Jianbai Huang, Anqi Zeng, Hongwei Zhang, Trade risk transmission of global cobalt industrial chain based on multi-layer network, Resources Policy, Volume 98, 2024, 105338

[190] Finalmente il nuovo regolamento europeo sui minerali dei conflitti il successo – parziale – delle organizzazioni della società civile e dei politici di buona volontà, Febbraio 2017 A cura di Daniela Finamore, Nohemy Graziani, Andrea Stocchiero Ufficio policy FOCSIV, pp. 4 -10,

note of non-recognition of the company for the purposes of issuing the "Responsible Importer" certification for the minerals and metals covered by the Regulation[191].

On 15 June 2016, the European Parliament, the Council and the Commission reached a political agreement on the European Union regulation on conflict minerals. Key points of the European agreement on conflict minerals 1. Mandatory due diligence for importers. The OECD due diligence guidelines form the general principle underlying the regulation: the recognition of existing and future due diligence schemes is, in fact, a central element of the legislation. The European regulation on conflict minerals requires mandatory due diligence checks for importers of metals (tin, tungsten, tantalum and gold) and their raw materials from conflict-affected and high-risk areas, whose imports exceed a specific annual threshold. External experts will be asked to provide an indicative list of high-risk areas and conflict-affected areas, based on information available in other due diligence schemes and from academia. Each list is to be considered indicative and non-exhaustive.

Small businesses importing these minerals (i.e., businesses below the import threshold) will not be required to comply with the due diligence system, so as not to be burdened with excessive bureaucratic requirements. Recycled metals, European stocks and derivatives are excluded from the regulation.

Large European companies that produce or sell products containing tin, tantalum, tungsten and gold – i.e., those subject to EU legislation on "non-financial reporting" in accordance with Directive 2014/95/EU (more than 500 employees) – will be encouraged to report on their sourcing practices based on a new set of indicators to be developed by the European Commission. Through these indicators, large companies will have to disclose specific information on products containing 3TG. In addition, the Commission will develop additional tools to increase, on a voluntary basis, the transparency and visibility of due diligence practices for the conflict minerals supply chain by all relevant downstream companies. The Commission is required to monitor the application and effectiveness of the regulation and then prepare a review report for discussion with the European Parliament and the Council: any further legislative proposals on conflict minerals must be based on these consultations. The review

[191] See also Radley B., Vogel C., Fighting windmills in Eastern Congo? The ambiguous impact of the 'conflict minerals' movement, The Extractive Industries and Society, Volume 2, Issue 3, 2015, p 406-410

must assess the effectiveness of the new law, both in terms of its impact on the ground and compliance by companies, as well as the need to introduce further mandatory measures to ensure that the European market has sufficient influence in the process of ensuring responsibility in the production and distribution of minerals worldwide. The Regulation therefore adopts a partial approach, as only large importers of metals and their raw materials will be required to monitor their supply chains, while all other companies importing minerals in finished or semi-finished products will have no obligations[192].

The European Union's action in recent years has been considered contradictory by many. Recently, the armed group M23 carried out a rapid and effective conquest and now controls a territory comparable in size to Rwanda itself: between 26 and 28 January 2025, it took Goma, the largest city in the North Kivu region, and on 14 February, Bukavu, the most important city in South Kivu. These two eastern regions of Congo are the richest in rare minerals sought after by the major powers.

On 13 February, the European Parliament approved a resolution on the conflict, which describes in detail Rwanda's responsibilities in the ongoing conflict, citing evidence provided by a group of UN experts, and documents human rights violations including rape, summary executions and the recruitment of child soldiers. The Parliament called for the freezing of the EU-Rwanda agreement on raw materials, signed just a year earlier, and the suspension of all financial and military aid until Rwanda stops supporting the rebels. As has been explained on several occasions, in early 2024, Brussels signed a Memorandum of Understanding on sustainable value chains with Kigali, with the aim of securing privileged access to coltan, tantalum, tin and rare earths. However, according to many observers, this decision legitimised an authoritarian regime accused of international violations.

On 17 September 2024, French MEP Mounir Satouri strongly criticised the EU-Rwanda agreement on raw materials in the European Parliament, recalling that the United Nations and several international NGOs accuse Rwanda of systematically plundering resources in the occupied Congolese territories through its militias.

[192] Finalmente il nuovo regolamento europeo sui minerali dei conflitti il successo – parziale – delle organizzazioni della società civile e dei politici di buona volontà, Febbraio 2017 A cura di Daniela Finamore, Nohemy Graziani, Andrea Stocchiero Ufficio policy FOCSIV, pp. 4 -10.

According to some observers, the agreement with Brussels not only legitimises but also formalises this illicit trade. This allows Rwanda to present itself as a mineral sorting centre even though it does not have deposits comparable to those in the Congo. The European Union's actions sometimes appear inconsistent and difficult to reconcile with rational logic. From 16 to 19 June 2024, European Commissioner for Crisis Management Janez Lenarčič visited Kinshasa to assess the serious humanitarian crisis caused by the conflicts. During his visit, he announced that the EU would provide almost €99 million in humanitarian aid in 2024, of which €35 million is still subject to approval. The global competition for the supply of rare minerals, which are essential for future development and the economic competitiveness of businesses, is therefore a strategic factor of growing importance in the arena of international relations. However, in a context of increasing violations and instability, the challenge for the European Union is to consistently reaffirm the principles of human rights protection[193][194][195]. In December 2025, Congo formally accused Apple of using coltan mined in conflict zones in its supply chains. The US multinational, which does not source minerals directly, immediately contested the claim, arguing that it had required suppliers not to purchase minerals from areas controlled by militias.

In theory, a traceability system – known as the International Tin Supply Chain Initiative (ITSCI) – should prove that the material used in phones and other electronic devices is extracted responsibly, does not finance conflicts and is not associated with human rights violations. To curb illegal trafficking of resources and counter armed groups such as the M23, several countries have established due diligence laws on the sourcing of critical minerals such as tantalum. The first country to introduce a law on mineral traceability was the United States in 2010 with the Dodd-Frank Act. In 2021, a regulation on responsible sourcing came into force in the European Union which, in addition to cutting the link between conflict and illegal exploitation of minerals, aims to eliminate all forms of abuse of local populations and mine workers. Meanwhile, pressure is mounting in Brussels to suspend the memorandum of

[193] Baccoli, M., Castellucci, S., & Donol, F. (2025, 22 maggio). *Il Congo orientale sanguina e Bruxelles conclude accordi: la realpolitik dei minerali rari*. *Il Bo Live*.
[194] Wakenge, C. I., et al. (2021). From “conflict minerals” to peace? Reviewing mining reforms, gender, and state performance in eastern Democratic Republic of Congo. The Extractive Industries and Society, 8(2), Article 100894.
[195] Deberdt, R. (2022). Land access rights in minerals’ responsible sourcing: The case of cobalt in the Democratic Republic of the Congo. Resources Policy, 75, Article 102534.

understanding with Rwanda to increase the flow of raw materials needed to produce microchips and batteries for electric cars. Signed in February 2024, the agreement provides €900 million to develop infrastructure in Rwanda for the extraction of various raw materials and for climate adaptation. The agreement has angered Congolese President Félix Tshisekedi, who called it a provocation in poor taste that plunders the natural resources of the Democratic Republic of Congo. The hoarding of critical raw materials is obviously not the only motive behind the clashes. Fighting between Congo, Rwanda and various rebel groups dates back decades and is intertwined with the conflict between the Tutsi and Hutu ethnic groups. The M23 claims to be defending the Tutsi, who, according to the Rwandan government, are persecuted by the Hutu and the militias responsible for the genocide of 800,000 Tutsi in Rwanda in 1994. After the massacre, more than a million Hutus fled to the east of the Democratic Republic of Congo, then known as Zaire, where many Tutsis also lived. This exodus triggered tensions that had devastating consequences for the future of Congo. Between 1996 and 1997, Rwanda invaded Zaire and supported a rebellion that led to the fall of Mobutu Sese Seko's authoritarian regime. Laurent-Désiré Kabila, the opposition leader backed by Rwanda, took power and renamed the country the Democratic Republic of Congo.

In 1998, however, Kabila turned against his Rwandan and Ugandan allies, allowing Hutu militias to reorganise in the east of the country. This move triggered a new invasion by Rwanda and Uganda, with Angola, Namibia and Zimbabwe siding with the Congolese forces. The conflict lasted five years and caused the death of more than three million people, further destabilising the entire region. Despite some peace agreements and reconciliation initiatives, violence and instability continued to rage in eastern Congo.

In 2009, the National Congress for the Defence of the People, a group representing the opposition, signed a peace agreement with the Congolese government. Peace lasted until 2012 when a group of Congolese rebels formed the M23 movement, which managed to capture the city of Goma. After international pressure, particularly from the United States, Rwanda was forced to cease its support and the M23 withdrew, before being defeated in 2013. After years

of silence, the M23 re-emerged in 2021 and, over the next three years, with support from Rwanda, it captured important areas in North Kivu, eventually taking Goma[196].

4.3. The difficulty in applying international regulations at a local level: the responsibility of companies and the complicity of local governments

On 7 January 2015, the European Parliament's Committee on Development (DEVE) published a draft opinion for the Committee on International Trade (INTA) on the proposal for a regulation presented by the European Commission. The Committee on Development welcomed the objective of the legislative proposal, recognised the importance of the OECD Guidelines but noted their low adoption rate. In order for the regulation to produce positive results, the Committee called for the establishment of a mandatory self-certification mechanism for refiners and importers of tin, tantalum, tungsten and gold from conflict-affected and high-risk areas. On 14 April 2015, the European Parliament's INTA Committee on International Trade voted on the amendments proposed within its Committee and those reported by the DEVE Committee. The Committee expressed the following views: - It voted in favour of mandatory due diligence for EU refiners and smelters, leaving a voluntary labelling system for importers. - It called for the extension of mandatory certification for actors in the supply chain who purchase tin, tantalum, tungsten and gold for the production of goods such as mobile phones and other electronic devices.

Serious concerns have been raised by various civil society organisations and the voluntary sector about the proposed European regulation. The following points have been raised in particular, relating to the need to introduce mandatory requirements for companies to ensure respect for human rights, rather than following a voluntary approach. Legislation based on voluntary participation is not effective: in fact, until the enactment of the US Dodd Frank Act, which, as we have seen, provides for a mandatory regime, very few companies had complied with due diligence standards. However, such mandatory conduct cannot be limited to a specific

[196] Fant, Simone. "Congo in guerra, come il coltan finanzia i ribelli armati." *Materia Rinnovabile*, 7 Feb. 2025

geographical area: in order to combat the trade in conflict minerals, a binding approach without any geographical restrictions has been called for. · Include a wider range of companies. If only importing companies (or even only extracting companies) were bound, this would exclude most of the industries that process minerals abroad and then export them to the European market in semi-finished or finished products. It should also be considered that if companies were included in a public register of "responsible and transparent companies", they could give their brand a lot of visibility, which would greatly benefit their image and reputation. The request was therefore to include all companies involved in the supply chain. · Include a greater number of natural resources. The Commission's proposal only covered tin, tantalum, tungsten and gold. Instead, it was requested that the types of natural resources whose supply and trade conceal human rights violations be expanded to include coltan, copper, jade, rubies and many others.

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On 20 May 2015, the revised proposal for a regulation was voted on by the European Parliament in plenary session. The European Parliament's vote proposed a mandatory approach and required all EU companies working with, importing or using tin, tantalum, tungsten and gold (3TG) to act responsibly by complying with due diligence, beyond INTA's initial request to monitor supply chains for European smelters and refiners only. FOCSIV, together with the other promoters of the Conflict Minerals Campaign, expressed its satisfaction with the Parliament's ambitious vote, while highlighting some gaps to be filled: the mandatory requirement needed to be better defined in order to ensure genuine due diligence, and many

[197] Finalmente il nuovo regolamento europeo sui minerali dei conflitti il successo – parziale – delle organizzazioni della società civile e dei politici di buona volontà, Febbraio 2017 A cura di Daniela Finamore, Nohemy Graziani, Andrea Stocchiero Ufficio policy FOCSIV, pp. 4 -8.

other natural resources that fuel conflicts around the world needed to be taken into account in the regulation[198]. In December 2015, after examining the Commission's proposal and the Parliament's amendments, the Presidency of the European Council presented a compromise proposal forming the basis for negotiations with the Parliament and the Commission in the new phase known as the "trilogue". Among the main points of the Council's compromise proposal: - as provided for in the Commission's first proposal for a regulation, any importer of tin, tantalum, tungsten and gold, in their raw and/or processed form, from conflict-affected and/or high-risk areas could become a responsible importer by simply declaring compliance with the due diligence standards to the competent authority of the individual Member State: therefore without any reference to self-certification (as in the Commission's proposal) or mandatory requirements (as in the Parliament's proposal). This would have created a list of responsible importers and a list of all responsible smelters and refiners to provide transparency and certainty to downstream companies regarding due diligence practices along the supply chain. At the same time, smelters and refiners would have had to undergo a third-party audit in order to be included in the list of responsible entities. - A different due diligence scheme for minerals and metals. For minerals, a traceability system was envisaged that would provide information on the mineral (name, type, quantity extracted, country of origin, etc.) and data from the supplier to the importer, with additional information required if the minerals came from conflict-affected and high-risk areas.

Once again, campaign organisations denounced the ridiculousness of such a weak solution, which was far from any binding approach and focused only on certain links in the production chain, and which would not have allowed for the creation of an ambitious regulatory framework to effectively and sustainably combat the trade in conflict minerals and related human rights violations. On February 2016 the trilogue negotiations between the Commission, Parliament and European Council start; and on 15 June 2016: European Parliament, Council and Commission reached a political agreement on the EU regulation on conflict minerals. Negotiations end. During the campaign, civil society organisations committed themselves to

[198] See also Xu, L., Guo, X., Xu, M. et al. Evaluation and impact factors of international competitiveness of China's cobalt industry from the perspective of trade networks. Sci Rep 14, 12165 (2024); Yingli Li, Jianbai Huang, Anqi Zeng, Hongwei Zhang, Trade risk transmission of global cobalt industrial chain based on multi-layer network, Resources Policy, Volume 98, 2024, 105338

informing and raising awareness among European citizens about the importance of achieving ambitious legislation on conflict minerals and to lobbying European and national institutions to take into account the criticisms and proposals of civil society[199].

The situation in the Democratic Republic of Congo risks fostering trends that could turn into concrete threats to the Atlantic Alliance. First, the ADF, which operates mainly in North Kivu, poses a threat. Its current size does not make it a particularly dangerous actor at the international level; however, the porous borders on which it operates and the chronic instability of the region could turn North Kivu into the next haven for international Islamic terrorism.

A second threat is posed by the Ebola epidemic. Sporadic cases of Ebola continue to occur in North Kivu. In addition, international efforts to combat the virus at the local level are severely hampered by frequent armed clashes, with displaced persons facilitating the spread of the disease.

Thirdly, the formal and informal presence of China and Russia should alert NATO members and *partners*. A priority should be to fill the *gap* that is emerging in terms of military presence in the area in order to support diplomatic and economic relations with Central African countries.

Finally, the country has strategic raw materials that are essential for the production of microprocessors and components that supply both consumer electronics and industrial, medical and military precision instruments. China's control over access to these raw materials poses a serious threat to the supply chain of strategic programmes such as the JSF (F35), and China's advantage in the DRC in terms of presence and government agreements is unmatched[200].

The challenges outlined above demonstrate the importance that NATO should give to the DRC in its future planning. The Alliance should act as an active interlocutor, going beyond the neutrality of the UN mission and finding a synthesis between local interests and NATO interests and values.

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[199] Finalmente il nuovo regolamento europeo sui minerali dei conflitti il successo – parziale – delle organizzazioni della società civile e dei politici di buona volontà, Febbraio 2017 A cura di Daniela Finamore, Nohemy Graziani, Andrea Stocchiero Ufficio policy FOCSIV, pp. 4 -8.

[200] Colacchio, Matteo, et al. "Instabilità e interessi strategici nella Repubblica Democratica del Congo." *Pandora rivista*, 16 luglio 2021

The first steps should be to raise awareness of the seriousness of the Congolese problems, to initiate diplomatic talks and a capacity-building mission, training government forces against non-state actors active in Kivu and providing tools and logistical platforms for intelligence gathering. It would then be necessary to bring private actors into the dialogue with the government for the development of infrastructure and mining activities. Once NATO's presence in the country is secured, other activities could be developed, such as the deployment of a multinational anti-kidnapping unit to protect diplomatic personnel, tourists, aid workers and other workers, anti-terrorism task forces and a naval base on the Atlantic coast at the mouth of the Congo River to support NATO members' naval activities, such as anti-piracy missions, in the Gulf of Guinea. Finally, support could be offered through CIMIC activities, which would broaden the scope of the mission with a view to combating infectious diseases and supporting education and local administrations [201].

4.3.1. The existence of small mines and the difficulty of enforcing rules and regulations, rights and certifications in the Congo

As mentioned, the DRC is a huge country, eight times the size of Italy, and these riches are found in different territories and contexts: gold in Ituri and South Kivu, diamonds in Kisangani, uranium, copper and cobalt in Katanga, not to mention precious timber almost everywhere. In North Kivu, the region we are getting to know, much of the Congolese coltan is concentrated: columbite-tantalite has been the gold of new technologies for years and its informal extraction finances local armed groups, who smuggle it in exchange for money or weapons, in a vicious circle that suffocates the social fabric. However, this is not the only resource in the area: tin and tungsten are other important minerals. And then there are hydrocarbons: oil and natural gas are present in large quantities. The oil is located within Virunga National Park, Africa's oldest park, best known for its last remaining mountain gorillas. The park covers a narrow, moon-shaped strip of land close to the border with Rwanda and Uganda. The oil fields already

[201] Colacchio, Matteo, et al. "Instabilità e interessi strategici nella Repubblica Democratica del Congo." *Pandora rivista*, 16 luglio 2021

identified are located mainly under the waters of Lakes Edward and Albert, further north on the border with Uganda. On the Congolese side, the British company Soco had obtained an exploration contract, but strong international pressure succeeded in 2015 in overturning the agreements. At least temporarily. In 2017, a new unknown company appeared, Oil Quest International, which according to Africa Energy Intelligence is controlled, through a series of Chinese boxes, by the son of the president of Soco. The latter is the former director of Gazprom Invest and president of Quantic Mining. Natural gas is found at the bottom of Lake Kivu, a very rare phenomenon found in only three lakes in the world: Kivu and the two Cameroonian lakes Nyos and Monoun. Gas extraction has been taking place on the Rwandan shore of the lake for several years.

The extraction of minerals is a completely different matter: from large companies, we move on to artisanal and often illegal work, which in some areas is one of the only means of survival for the population. According to the latest report by the United Nations Group of Experts on the DRC, published last December, "armed groups and criminal networks have continued to engage in the illegal trade of tin, tantalum and tungsten from mining sites located in the Masisi territory", which borders the Rutshuru territory (remember that a "territory" is an administrative entity roughly equivalent to our province). 'In May and June 2020,' the report continues, 'armed fighters from the NDC-R (Nduma Defense of Congo-Renovated, one of the local militias) taxed coltan and cassiterite mines in Kibanda, Rubonga and Maboa, which were classified as exempt from any armed control according to government lists.' This is a clear indication that attempts at verification and control at the state level often do not work. The report goes on to reconstruct the route taken by unlabelled tantalum extracted from mines controlled by armed groups, which is smuggled into Goma and from there to Rwanda. Confirming what has been known for years, the Rwandan authorities responsible for combating mineral fraud have stated that they have not recorded any cases of mineral smuggling from the DRC since the beginning of 2020, despite the evidence provided in the UN report.

Experts also point out that during the lockdown due to the pandemic, the flow of unlabelled tantalum and tin from Masisi increased and that the closure of borders encouraged smuggling.

These documented and specific facts are part of efforts to curb the illegal trafficking of resources, which on the one hand brutally exploits the labour of people, often including minors,

who have no other job prospects, and on the other hand fuels corruption, guerrilla warfare and malfeasance. It should be remembered, however, that the situation is improving. While exploitation continues unabated on the ground and "blood minerals" (as they are called) pass through Rwanda and from there to China, where they end up in factories producing all our technology, at least something has changed at the formal level. Thanks to international mobilisation campaigns, the Obama administration had already succeeded in establishing a law on mineral traceability. The Dodd-Frank Act, the comprehensive Wall Street reform law, requires multinational companies to declare the origin of their raw materials. In the meantime, the European Union had also taken action and, following the example of the Dodd-Frank Act, in 2017 it approved a regulation prohibiting the import into the European Union of cassiterite (from which tin is obtained), wolframite (tungsten), columbite-tantalite and gold from conflict zones. After giving importers four years to comply, the regulation came into force throughout the European Union on 1 January 2021, requiring companies importing minerals to carry out *due diligence*, i.e. to ascertain the origin of the minerals used, and to declare the origin, quantity and date of extraction of the minerals. If the place of origin is at risk, such as the Democratic Republic of Congo, the importer is required to indicate the mine, place of processing and taxes paid.

Unlike the Dodd-Frank Act, the European legislation does not apply to finished products, which can therefore still be the result of exploitation, legally sold and end up in our pockets. However, it is an important first step towards regulating the extraction and trade of minerals. Cobalt is excluded from all these treaties, despite its consumption having exploded in recent years with the rise of electric mobility and the need for long-lasting batteries. Here too, much of the cobalt on the market comes from the DRC, particularly from the southern region of Katanga, where the very serious problem of labour exploitation, including child labour, is at least not mixed with the interests of armed groups. However, it remains urgent to include cobalt in the existing regulations. The credibility of our "new development model" is at stake.[202]

In particular, coltan is a material in high demand in international trade: it is a mixture of columbite and tantalite, and tantalum, a metal powder that is highly resistant to heat and capable

[202]Baioni, Giusy. "Repubblica Democratica del Congo: le risorse che fanno gola al mondo." *ISPI*, 25 Feb. 2021

of withstanding high electrical charges, is obtained from its processing. With technological progress and the increase in demand for everyday electronic devices, the price of coltan has risen exponentially, as has the interest of illegal traders, who have recognised the potential profits to be made from the illegal extraction and sale of the mineral. International interest and poor regulation of the coltan mining and production chain led to it being dubbed a “blood mineral” as early as the 1990s, in parallel with the widespread use of new everyday technologies assembled in China, Europe and the United States. The need to meet demand has led to indiscriminate exploitation by international companies, but has also encouraged various armed groups to take control of the extraction process, using the proceeds to buy weapons for fighting over territory. Once again, it is the Congolese population that pays the price, grappling not only with civil conflict but also with poverty and unemployment. These factors favour both international companies and local coltan traders, who mainly employ women and children in the mines, where they are forced to work for very low wages and exhausting hours. Children's small hands are particularly suited to extracting the mineral, as is their height, given that the mines consist of narrow tunnels that a man of normal height would not be able to enter.

Around 80% of Congolese children do not enjoy their rights as children. They mainly extract cobalt, which is mainly destined for China, in particularly dangerous conditions and wash the rocks immersed in polluted pools. 20% of the mineral extracted comes from the southern part of the country, where the coronavirus has brought children back to the mines of Kolwezi, the world capital of rare earths.

In the communities of Domaine Marial, 65% of children between the ages of 8 and 12 work in the mines; in the Kanina area, almost the majority of school-age children do so. Sometimes, these are children between the ages of 6 and 8, who are particularly suited to crawling into the narrow tunnels used for mining. They work in extreme conditions for more than twelve hours a day, without any protection and for wages of two dollars a day. The risk of falling ill earlier and more than their peers is very high, as is the risk of accidents, including fatal ones, at work due to the transport of heavy loads or cave-ins in the former province of Katanga. Children are also subject to greater abuse and mistreatment, often brutally mistreated by gangmasters and security guards.

The exploitation of child labour is prohibited by numerous international conventions (the Universal Declaration of Human Rights; the International Convention on the Rights of the Child; ILO Convention 138; ILO Convention 182; the International Labour Organisation's Declaration on Fundamental Principles and Rights at Work), yet many local children work out of economic necessity even after attending school for only a few years, while others have never had access to primary education. This is mainly due to a lack of adequate state funding, as most schools do not cover the costs of education, such as teachers' salaries, uniforms and teaching materials. In recent years, there have been initiatives by miners' families who, with the help of numerous civil society organisations, – overwhelmed by the work of sifting and washing cobalt without masks or gloves, exposed to a high risk of respiratory diseases and serious infections – have denounced the difficult conditions in which they work, calling on governments, financial institutions, international organisations and the private sector to take action to support artisanal mining communities and, above all, to end child labour in the mines. In addition to the high risk of serious illness or death, which is high for everyone, there are general security conditions, the precariousness of which depends on the context of the country: militias can take control of the mines at any time. Finally, the race to the bottom in mineral prices exposes workers of all ages to exploitation.

In 2016, the DRC government therefore set up a Commission on Child Labour in the Mining Sector and drew up a strategic plan with the aim of ending child labour in artisanal mines by 2025. Multinational electronics companies and car manufacturers must ensure that the cobalt used in their products has not been extracted through child labour; they have a responsibility to identify, prevent, resolve and report on human rights violations throughout their supply chains, and the provision of human rights risk assessments remains a key issue. Cobalt is important for the local and national economies of the DRC, but the sector faces significant challenges in translating this mineral wealth into sustainable development outcomes and an equitable distribution of productivity gains. In this regard, since the end of 2020, the DRC's National Ministry of Mines, represented by Willy Kitobo Samsoni, has joined the Steering Committee of the Cobalt Action Partnership (CAP), demonstrating the government's presence in the sector. The CAP, an initiative in collaboration with the Global Battery Alliance – a collaboration platform founded in 2017 by the World Economic Forum to establish an ethical

value chain for sustainable batteries by 2030 –, was formalised in May 2020 as a coalition of public and private organisations united for the sustainable and ethical extraction of cobalt.

The stakeholders implementing the Partnership are committed to identifying solutions and actions in the private, public and non-profit sectors to regulate the extraction and sale of artisanal and small-scale cobalt, promote market access for producers, formalise operations, eradicating child labour and human rights violations in cobalt mining communities, and harmonising existing initiatives working on these issues. This is to achieve the objectives of the Paris Agreement and economic development in line with the United Nations' concept of environmental sustainability by 2030, as well as to protect human rights[203].

In the current context, and despite the aforementioned revision of the exploitation code, several multinationals have been able to benefit from the revenues generated by the wealth of the Congolese subsoil. Industries such as Glencore, CDM, Randgold, China Molybdenum and others have directed their activities to the DRC; for example, the Swiss company Glencore controls a staggering 35% of the entire world production. Over time, many other industries have opened factories in close proximity to mining sites (from Volkswagen to Apple, Microsoft to Huawei), thus securing a large slice of the Congolese mining pie.

This situation is exacerbated by the working conditions of the miners. Since cobalt occurs in the form of small sediments, a significant portion is extracted by hand; moreover, the veins are often accessible only through narrow, rudimentarily dug tunnels. Several non-governmental organisations, notably Amnesty International and Afrewatch (which published a joint report several years ago), have denounced repeated and ongoing human rights violations in the mines. Accidents and deaths are frequent, especially in the Katanga region, where there are numerous artisanal mines. Working hours often exceed 12 hours a day. Furthermore, UNICEF has estimated that around 40,000 children aged between 3 and 7 work in the mines every day; hundreds of thousands more workers operate in precarious conditions that defy the most basic occupational safety rules. The (weak) trade union protections are easily circumvented, resulting

[203] Spizzuoco, Fiorella, e Ornella Orditurо. “RDC, l’inferno delle miniere di coltan e cobalto.” *Africa Rivista*, 8 maggio 2021

in an illegal trade in raw materials that evades controls and is injected directly into international trade flows.

The new mining code came into force in 2018. It provided for an increase in taxation from 2% to 10%, bringing the Congo into line with the global average for the sector. However, the new legislation has been criticised by all parties involved, starting with human rights activists who accuse the government of missing an opportunity to regulate miners' conditions. Others have pointed to the lack of measures to combat rampant corruption, which has for years been a brake on more decisive action by the government. The mining sector has highlighted the economic damage this will cause. In any case, these measures will have an impact on the cobalt market. This is all the more so given that most of the resources are concentrated in a few mining companies and 80% are refined in China: ideal market conditions are far from being achieved. Some believe that the new government taxes will impact the price of cobalt, which will then be passed on to the price of finished products: the price of cobalt rose by 195% between 2015 and 2019 alone. This is a direct and crucial effect on the global market. Demand is growing much faster than supply, which could jeopardise the product's future viability. Some technology giants are trying to create cobalt-free batteries for the global market, and the latest generations are actually using less and less cobalt; however, in the short term, it is difficult to imagine the world pulling the plug on cobalt.[204]

In conclusion, it is clear that despite significant regulatory progress at the international level, there is still a considerable gap between formal regulation and its application at the local level, and a wide and deeply problematic gap remains between the two dimensions. In fact, as we have seen, certifications and due diligence obligations have undoubtedly been tools whose importance cannot be underestimated, but they are often not yet fully effective in contexts where there is significant institutional fragility and systemic exploitation of workers, especially minors. It therefore appears necessary, in order for mineral certification to have a lasting effect, to improve the level of coordination between governments, businesses, and communities, so as to genuinely address the structural causes of illegality.

[204] Andrea Lapegna, Congo: miniere di cobalto e grandi interessi internazionali, Aspenia online 6 settembre 2019, online https://aspeniaonline.it/congo-miniere-di-cobalto-e-grandi-interessi-internazionali/, URL accessed august 2025

CONCLUSIONS

As highlighted in the discussion so far, there are numerous and complex challenges concerning the protection of human and environmental sustainability in mining on the African continent. The first chapter has shown how these challenges must be understood within a multilevel regulatory framework, in which national governance, regional integration initiatives, and global trade rules interact in often fragmented and contradictory ways. The roles of the African Union, the African Continental Free Trade Area, and the GATT reveal both the potential and the structural limits of regional and international regulation in addressing the governance of mineral resources.

From coltan to gold, oil to timber, the DRC's treasure is a "magnificent cake to be shared", as Leopold II of Belgium once said. In fact, the balance imposed by the international scenario that followed the end of the Cold War meant that the African Great Lakes, with their rich resources, became a flashpoint for both continental and international actors. The clash and outbreak of violence between the various actors involved were accelerated above all by the Rwandan genocide and the subsequent "African war" of 1998, a confrontation that was rationally inexplicable in light of the potential, importance and wealth of a country that should have been a point of geopolitical recomposition to be preserved in the interests of many powerful international actors. Geographically, the DRC is immense, but still poorly connected; there are strong social and linguistic differences; the Hutu–Tutsi question remains unresolved, a constant source of violence; state legitimacy is undermined from within and attacked from without.[205]

As shown in the analysis above, it is particularly the historical and political context of the Democratic Republic of Congo that demonstrates how mineral wealth in Africa

[205] Matteo Colacchio, Lorenzo Gardini, Camilla Ravagnan, Ludovica Santo, Instabilità e interessi strategici nella Repubblica Democratica del Congo, in "Pandora rivista" 16 Luglio 2021, online https://www.pandorarivista.it/articoli/instabilita-e-interessi-strategici-nella-repubblica-democratica-del-congo/, URL accessed august 2025

inevitably becomes a tragic factor of instability at multiple levels (economic, social, humanitarian) rather than representing a powerful element of development, as it should. The second chapter has illustrated how cobalt, as a critical raw material within multilateral trade systems, exemplifies these dynamics, combining growing strategic relevance for the energy transition with persistent regulatory gaps and serious human rights violations along the supply chain. These resources fail to act as a driving force for regional integration by fuelling economic growth. On the contrary, they are almost always at the root of inter-ethnic clashes, local wars and armed conflicts of varying intensity, accompanied by endemic and uncontrollable corruption and indiscriminate exploitation of human beings and nature.

It is clearly the structural fragility of institutions, which is constantly exploited by local and international armed actors, that sets in motion and perpetuates a cycle of violence that has so far prevented the establishment of transparent governance and will probably continue to do so in the near future. As highlighted in the third chapter, the Democratic Republic of Congo's central role in global cobalt supply chains further amplifies these vulnerabilities, as national regulatory frameworks remain weak and international initiatives struggle to translate formal commitments into effective control and accountability on the ground.

Added to this is the dramatic inadequacy of infrastructure networks, which makes it virtually impossible to monitor and verify the traceability of activities carried out by the various parties involved in resource extraction. As can be seen, this is a situation in which national regulations are inevitably ineffective, as they are easily circumventable, while efforts made within the framework of multilateral regulations never, or almost never, succeed in bringing about real improvements in the management of problems on the ground due to the structural crisis factors mentioned above. Of all these issues, it is obviously the question of respect for human rights that is of greatest concern, with particular regard to the tragic reality of child labour, which continues to be a dramatically central and still unresolved problem.

The fourth chapter has shown that international mineral certification and due diligence mechanisms represent an essential, yet insufficient, response to these challenges. While instruments such as the US Dodd-Frank Act and EU regulations have introduced important obligations for companies, their effectiveness remains severely constrained by enforcement difficulties at the local level and by the limited accountability of both corporate actors and domestic authorities. Once again, the international community's efforts to implement effective regulation of the mining sector in Congo represent a serious test of the strength and capacity of international cooperation and the certification tools it has put in place to protect security and sustainability.

The dynamics described above seem to inevitably conflict with the regulatory framework of international law, especially with the set of rules governing permanent sovereignty over natural resources and the protection of human rights, as outlined in the numerous international and regional conventions mentioned in the analysis presented above. In essence, from a legal and ethical standpoint, there is a clear need to implement international cooperation and the role of international organizations, seeking to go beyond the level of mere humanitarian assistance. These are bodies, in particular the United Nations (through MONUSCO, for example), the European Union, and African institutions, which are called upon at this stage to overcome the attitude of excessive neutrality that has led to inconsistent approaches so far, seeking to act more decisively in applying the required standards of due diligence and supply chain certification.

It is therefore through a more coherent interaction between national governance, regional integration, and global legal frameworks, and through the genuinely binding application of international law, that it becomes possible to counteract the vicious circle that exists between mineral resources, conflict, and systematic human rights violations. In this way, the Congo's wealth can finally become a catalyst for genuinely sustainable development in the area, ceasing to be an unpredictable and constant factor of destabilization.

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