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Balancing EU Values and strategic needs in the Critical Raw Material Race: the case of copper-cobalt mining in DR Congo

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Plagiarism statement

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Abstract

This thesis examines the European Union's dilemma in balancing its strategic needs for Critical Raw Materials (CRMs) with its commitment to human rights and environmental protection, focusing on copper and cobalt mining in the Democratic Republic of Congo (DR Congo). DR Congo, in which the northern part of the Copperbelt is located, is a mineral-rich highly strategical country. As the EU pursues ambitious climate targets, its dependence on CRMs, particularly those sourced from regions with European standards are challenged, creates a tension between economic interests and core values. The investigation dives into the global CRM market, with special attention to the DRC's Copperbelt region, where China holds major influence. Through a case study of the Tenke Fungurume Mine, the research investigates labour standards, child labour, health impacts, and environmental impact of the mine in the Congolese Copperbelt. This thesis argues that the European standards on human rights and environmental protection cannot be effectively promoted in DR Congo, in the current geopolitical context. However, this is a crucial aspect for the EU, which has based its legitimacy and credibility on the promotion of a value-based foreign policy.

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Introduction

The global race for Critical Raw Materials (CRMs) has placed the European Union at a critical juncture where its strategic interests and core values are in tension. As the EU pursues ambitious climate targets, the development of clean technologies such as electric vehicles, solar panels, and wind turbines has become crucial to their achievement. These technologies rely heavily on CRMs, notably cobalt and copper, which are essential components of lithium-ion batteries. However, the precarious nature of CRM supply chains, coupled with their geographical concentration in regions like Africa, China, and Latin America, presents significant challenges for the EU.

Copper and cobalt are two minerals crucial to the achievement of the green and clean transition. However, they are both classified as Critical Raw Materials (CRMs) by the EU, highlighting the precarity of their supply chain. Half of the global supply of copper and cobalt is located in DR Congo, more specifically in the Copperbelt. Cobalt is a byproduct of the production of copper, which explains how deposits of the two minerals are found in the same place. But the production of copper and cobalt is dirty, along with frequent breaches to human rights. This is particularly the case in DR Congo, where the state, despite having appropriate legislation, is not strong enough to correctly enforce them. Moreover, 15 of the 19 biggest copper and cobalt mine in DR Congo are owned by China (Africa Defense Forum, 2023). Therefore, those mining compagnies are submitted to the Chinese law, less strict in terms of environmental and human rights standards. As copper and cobalt are crucial for the green transition, the EU is still importing those minerals from China (Grohol and Veeh, 2023). In the global race for Critical Raw Materials (CRMs), the EU consequently finds itself at a crossroads where its values collide with its strategic interest. As the practices in the copper and cobalt mines of the Democratic Republic of Congo (DR Congo) demonstrate, the ethical standards of the EU are challenged while securing its technological future. According to a RAID report, “a global assessment of human rights and environmental abuses associated with mining operations between 2010 and 2022, conducted by the Business and Human Rights Resource Center, shows that the DRC ranks third in the number of allegations identified.” (RAID & Afrewatch, 2024, p.11).

Critical Raw Materials, such as copper and cobalt, are characterised by an exponential boom in demand, coming from the political will to achieve the climate targets. However, the supply chain of CRMs is precarious, hence the classification of a mineral as “critical”. The ores of CRMs are concentrated in a few geographical areas worldwide such as Africa, China and Latin America. This geographical concentration he precarity of the CRMs supply chain has been visibly demonstrated during the COVID 19 crisis, that disrupted no less than 275 mining operations at the global scale (MacDonald, Lam and Penchev, 2020). In the EU, the criticality of each minerals is assessed according to its supply risk and its economic importance (Grohol and Veeh, 2023). However, there is no universal definition of a Critical Raw Mineral, as it depends on the importance. For example, the USA classify the Critical Raw according to the importance to energy and to the supply risk (U.S. Department of Energy, 2023).

In the EU, the problematic of the CRMs gave rise to three salient issues that need to be addressed.

First, the European political objective is to diversify the supply chain, that is more and more at risk given the global geopolitical context. Currently, the CRMs supply chain largely lies on China, that holds a near monopoly on the cobalt, copper, Rare Earth Elements (REEs)’s supply chain, among others (Grohol and Veeh, 2023). Tensed relations with China, or with other main exporters of CRMs is, in parallel, dangerously increasing, and CRMs are becoming geopolitical weapons. Diversification of the CRM’s is thus essential to secure the supply chain.

Secondly, the EU aims at the implementation of sustainable standards in all sectors, including mining. This will allow the Union to source sustainable minerals and avoid accusations of emissions’ delocalisation. In the framework of the European Green Deal, greenwashing accusation risk to put the credibility of the EU at risk.

Finally, and as a consequence of the hazardous geopolitical context, a strategic independence from China is a top-priority of the EU. This independency is crucial, as it currently induces vital danger of the supply chain, along with non-respect of the sustainability standards (Girtan, Wittenberg and Grilli, 2021; Carry, Godehardt and Müller, 2023; Grohol and Veeh, 2023).

There are options to reduce the EU's dependency on third parties, such as domestic mining or recycling of CRMs. However, despite several CRM ores in the EU, the current European demand is insufficient to justify a large investment in the domestic production (Tiess, Murguía and Wertich, 2018). Moreover, the European continent lacks sufficient ore deposits to meet the escalating demand for Critical Raw Materials (CRMs) and does not possess the full spectrum of minerals classified as CRMs (Lewicka, Guzik and Galos, 2021). In 2012, only 12 out of the then 20 minerals long CRM list was produced in Europe. In addition to this little production (0 to 17% of the global production in 2012, according to the minerals) compared to important consumption (7 to 25% global consumption in 2012, according to the minerals), there is no guarantee that the CRM extracted in Europe will end up in the European market (Tiess, Murguía and Wertich, 2018). Regarding the option of increasing recycling of CRMs, the current numbers proof that recycling won't be viable on the long term, as we are only entering the challenge of critical minerals (Moore et al. 2020). In the case of copper for example, only 8.5 out of the 13 Mt issued every year is recycled (Gielen 2021). As infrastructures take a long time to be planned and built, recycling cannot be the sole strategy of governments to ensure the viability of this resource.

To address this challenge of strategic importance, the EU has developed a so-called "Raw materials diplomacy" (European Commission, 2024). The Raw materials diplomacy aims at integrating this problematic in the formulation of foreign policies by the EU. As an example, several strategic agreements have been signed with resource-rich countries other than China, in the view of diversifying the supply chains. Moreover, those agreements serve as a framework to implement European values such as the protection of human rights and of the environmental in the supply chain of CRMs.

The EU's foreign policy is indeed based on value since the creation of the EU. Legally, the Treaty on European Union (TEU) mandate the Union to promote its values in its external policies. In this view, the article 21 of the TEU lists external policy objectives like the "safeguard [of] its values, fundamental interests, security, independence and integrity". Another driver of the EU's foreign policy is to "foster the sustainable economic, social and environmental development of developing countries, with the

primary aim of eradicating poverty". In regard to mining specifically, the provision (f) of the article 21 TEU states that the Union shall pursue external policies to "help develop international measures to preserve and improve the quality of the environmental and the sustainable management of global natural resources, in order to ensure sustainable development" (European Union, 2012, p.28-29).

The EU is using its external policy instruments, namely the Global Gateway Initiative, in order to promote its values. However, one can wonder if that way of doing has come to an end with the CRM's European current policies. Indeed, the consequent dependency on China combined with the little power of influence over the country in this field increase the difficulty of having a real impact on the supply chains of copper and cobalt. Moreover, the question of the legitimacy of the EU to impose such standards is increasing. The EU is often described as a normative power, is acting in the case of the CRM as a "an economic resource diplomat an as a global extractive governor" (Awuah, 2019). But the rise of the BRICS+6 in the CRM governance, shows that that the geopolitical landscape is shifting. The EU's influence may be waning in the face of emerging powers that are increasingly asserting their control over critical resource markets (Vivoda, Matthews and McGregor, 2024). In other words, "the emergence of actual (Mineral Security Partnership [including the EU, the US and Japan]), and potential (BRICS+6) collective trade groupings underscores a paradigm shift from generalized traditional alliances to more resource-centric coalitions, which are acting to rapidly redefine the contour of international relations and economic influence" (Vivoda et al., 2024, p.7).

In the context of the geopolitical race for CRM, the EU has everything to lose and nothing to support its competitivity worldwide, apart from its value-based approach. However, this specific aspect is attractive, but not sufficient to balance China's weight in the CRM supply chains. The problematic of the Critical Raw Materials thus represents a complex dilemma for the Union. Given the global distribution of CRMs, the most valuable minerals are frequently located in countries that are undemocratic or have political systems and policies that diverge significantly from the European Union's values and principles. In 2021, 99% of REEs were imported from China, 98% of borates

from Türkiye, 85% of niobium from Brazil, 71% of platinum from South Africa and 68% of cobalt from DR Congo (Lewicka, Guzik and Galos, 2021). In addition, the compagnies operating in those countries do not respect fundamental EU values in various documented cases (Amnesty International and Afrewatch 2016; Bikubanya et al. 2023). As a consequence, it is very hard for policymakers to rely on those reports, since issues regarding environmental protection or respect of human rights are often not reported (RMF, 2022).

To investigate more in depth this challenge by looking at the case of a copper and cobalt mine in the Copperbelt, this investigation will answer to the following research question: How does the EU's dependency on Critical Raw Materials (CRMs) influence its geopolitical strategies and commitment to human rights and environmental protection in the Copperbelt?

To answer to this problematic, Section 1 will first describe the global context of the geopolitical race for CRMs. By looking specifically at the policies of the main actors in the DR Congo (EU, China, DR Congo), the legal framework of the mining governance will be set up. Then, Section 2 will examine the violation of EU norms by the mining industry in Africa, taking as well into account the international regulations. Section 3 will investigate in detail the case of the Tenke Fungumure mine (TFM), located in the Congolese Copperbelt, that is of significant relevance in the global trade of cobalt, including for the EU. Finally, Section 4 will discuss the results of the case study by reviewing the different initiatives the EU takes to promote its values in the CRM trade along with integrating some criticism of the European intervention in DR Congo.

I- Geopolitics of the Critical Raw Materials

a. Global market of the Critical Raw Materials

The Critical Raw Materials (referred further as CRMs) are materials crucial to the production of clean technology goods, such as Electrical Vehicles (referred further as EV), solar panels or batteries. In the context of the green transition, these raw elements

will know a drastic boom in demand. By 2050, it is estimated that the material demand for EV will increase by 1011%, by 3685% for batteries and by more than 13800% for solar Recreational vehicles (Solar RV) (Blot, 2024). The term "Critical Raw Material" thus does not refer specifically to "rare" materials, but rather those that will experience exponential demand in the next decades, while relying on a precarious supply chain.

As a fact, the second characteristic of a Critical Raw Material is its concentration in a few parts of the planet. This concentration makes its supply chain considered at risk, given potential geopolitical tensions. CRMs has already become a geopolitical weapon in the case of the Chinese export ban of rare earths to Japan in 2010, following a territorial dispute (Nakano, 2021).

Despite those tensions, CRMs are crucial to lead the green transition, and global powers such as the EU cannot afford such risk. The EU therefore needs to reduce its dependency by securing a diverse supply chain or by establishing durable partnerships with resource-rich countries, as has been the case recently with Australia. As part of the European Raw Minerals Diplomacy, the Union is signing agreements with strategic countries, like Australia, that holds a significant number of CRMs. *Figure 1* highlights the repartition of the CRMs highlights the high dependency of the Union on a limited number of countries, such as DR Congo, China or Brazil. This map only features the list of CRMs as defined by the EU, listing 34 minerals. The US's most recent CRM list, in comparison, include 50 minerals (U.S. Department of Energy, 2023).

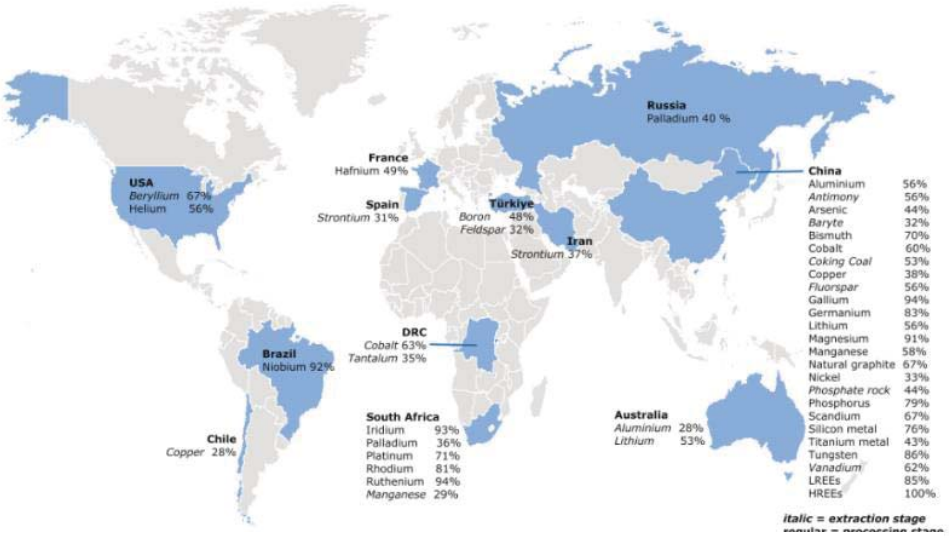

Figure 1: World concentration of CRMs exporters to the EU (Grohol and Veeh, 2023)

As a result of the geographical concentration of the resources, according to the IRENA, "the global market for CRMs faces several insecurities, such as export restrictions, resource nationalism, mineral cartels, market manipulation, political instability, social unrest and external shocks" (Blot 2024, p.5; IRENA 2023). The main importers of CRMs such as the EU, the US and Japan, are almost entirely reliant on China and other resource-rich countries (*Figure 1*). More specifically, the US is overly concerned with the geopolitical consequences of its dependence, resulting of its tumultuous relationship with China. The concern of the EU and Japan rather lies in their industrial competitiveness that could be deteriorated as a consequence of supply disruption (Andreoni and Roberts, 2022). Moreover, China has extended its global dominance on the CRMs market by investing in infrastructures in developing countries such as DR Congo. This is the implementation of the Belt Road Initiative, the foreign investment and development policy that has been led by the Chinese government since 2013 (BRI Office, 2017).

This analysis will more particularly focus on cobalt and copper, two critical minerals mostly found in DR Congo. The characteristic of cobalt is that "[b]eing largely a byproduct of copper and nickel mining, cobalt production is linked to the global production of these commodities. Cobalt output is directly affected by production cutbacks of copper and nickel mines and refiners […]. Increasing cobalt demand, therefore, cannot be met without concomitantly increasing demand for copper or nickel. Steep cobalt price increases, such as the one observed in early 2017, are the result." (Barazi et al. 2017, p.2). Most of the global supply of copper and cobalt is found in DR Congo, that holds 70% of the global supply (Chandler, 2022). However, China 77% of the global cobalt resource's refining takes place in China, which illustrates the monopoly of the country on the copper and cobalt supply chain.

More largely, the centrality of the CRM and the struggles of the EU to impose its leadership while respecting its values is the symptom of a global geopolitical shift between the Global North and the Global South. While the BRICS are gaining more and more power on the international stage, the EU is at the back. The green transition and the centrality of the Critical Raw Materials in the current policies operate a shift in the

geopolitical order. Resource-rich countries are gaining power, to the expend of the Global North, dependent on those emerging powers. The BRICS are, in this regard, a powerful emerging group, that include 46% of the global population, 29% of the global GDP along with abundant natural and human resources (Vivoda, Matthews and McGregor, 2024). They are thus highly powerful in the CRM supply chain, and the Global North almost exclusively depend on them (*Figure 1*).

b. Challenge and opportunities in CRMs production in Africa

Africa is one of the richest continents on Earth in terms of minerals resources. It is estimated to hold about 30% of the global mineral reserves, including a large proportion of CRMs like cobalt, aluminium, bauxite, manganese… (Chandler, 2022). Africa's resources are thus crucial in the achievement of the green and digital transition on the planet. The economy of several African countries such as DR Congo, Madagascar, or Botswana largely relies on the mining activities (Adu and Bosco Dramani, 2018).

Located in Zambia and in DR Congo, the Copperbelt is a geographical region particularly rich in copper but also in cobalt, that are classified as CRMs by the EU and by the US (Grohol and Veeh, 2023; US Department of Energy, 2023). The region extends about 450 km, reaching 260 km in width. The Copperbelt concentrates 10% of the world's resource in copper. It thus has been extensively exploited ever since the colonial period. The Copperbelt region includes over 35 major operational mines in Zambia and DR Congo. This number fluctuates over time, given that new mines open and other closes. As a consequence of its abundant resources, The Copperbelt is a highly strategical region in the green and digital transition. It also plays a significant strategic role in the framework the competitivity race between the US, China and the EU.

The numerous resources held in the African ground represent an opportunity of development for the countries such as DR Congo and Zambia, located on the Copperbelt. This opportunity is even more strategical in the context where, in 2022,

43% of the African total population did not have access to electricity (Cozzi *et al.*, 2022). The geopolitical race around the CRM and the money flows it generates represents, as a consequence, a resource around which social and economic development of the continent can be financed (Cozzi *et al.*, 2022; Stein, Bruch and Dieni, 2023). In practice, "investment and responsible development in mining for inputs to clean energy technology also has the potential to elevate developing countries and communities through public revenues and jobs" (Stein, Bruch, et Dieni 2023, p.10212). According to the Centre of Strategic & International Studies, the potential development outcomes in Africa created by CRMs depend mostly on how the government recognize the strategic values of the CRMs. Drawing from the extensive national and intergovernmental policies drafted in this regard, particularly in the DR Congo, this is already acknowledged by the governments since many years (African Union, 2009; Cabinet du Président de la République, 2018; European Commission and Congolese Mines Ministry, 2023).

Secondly, it depends if the governments are not captured by interest and are both willing and capable to negotiate the CRM rights. In the case of the DR Congo, the government has established a track record of renegotiating mining deals, but questions remain about transparency and whether the new terms truly benefit the country. The country is indeed facing challenges regarding corruption in the mining industry, which impacts the good governance of the sector (Géraud Neema, 2024).

i. CRM mining as a strategic development opportunity in Africa

The abundance of CRM resource in Africa is a significant opportunity for development, but encounters several governance challenges that jeopardize the security of the supply chain for importers, along with internal security issues (Awuah, 2019; Andreonia and Avenyob, 2023; Boafo *et al.*, 2024). The current situation in Africa features a potential for development, that is not implemented yet as it faces numerous challenges. On the other hand, the expansion of the mining industry on the continent has created prevalent social and environmental issues, due partially to a lack of regional coordination (Nakano, 2021).

As a continent holding around 30% of the global resource in minerals (Boafo *et al.*,

2024), Africa is receiving high foreign investment in order to exploit those resources, as large compagnies are sometimes more equipped than countries to lead such operations (Awuah, 2019). As a striking figure, in 2022, 80% of the exploration expenditure in Africa were made by Canada, Australian, English and South African compagnies (Wouters, 2024). This race to the CRMs operated between industrialized powers represents an incentive for African countries to engage in a green industrialization process. Indeed, this competition provides a welcomed economic opportunity on the continent, that is in majority "small, open, and undiversified" (Bevan, Collier and Gunning, 1992; Acheampong, 2024).

The CRM in Africa thus represent a powerful opportunity of growth for African countries along with promoting sustainable development in their territories. On the other hand, diversifying a supply chain to Africa is very advantageous for consumers of CRM like the EU or the US, since one of the main objectives is to avoid dependency relationships upon such strategic resources.
However, the example of the DR Congo illustrates a paradox. Indeed, the country supplies more than two thirds of the global cobalt, but is still ranked as one of the poorest countries in the world (World Bank, 2024).

The foreign investment of which African countries have benefitted has allowed to raise the living standards on the continent. For example, "A report pointed out that from 2005 to 2016, China invested in 293 projects in Africa, creating more than 130,000 jobs. In 2016, FDI from China created 38,417 jobs in Africa" (Yanne Sylvaire *et al.*, 2022, p.4). Moreover, 37% of the Neighbourhood, Development, Cooperation and International Cooperation Instrument (NDICI) of the European Union has been dedicated to contribute to "eradicating poverty and promoting sustainable development, prosperity, peace and stability" (Tay, 2023).

ii. Security, economic and health risks brought up by CRM mining

However, this does not come without risks for the population. First of all, the expansion of the mining activities has strong implications for the local community, who is often displaced without proper compensation (Amnesty International and Afrewatch, 2016; Stein, Bruch and Dieni, 2023). Indeed, the mining activities emit air, water and soil pollution, making the area inappropriate for habitation (RAID and Afrewatch, 2024). Moreover, the displacement of population previously dependent on agriculture is dramatic for families. Agriculture is indeed the way to "support children's education, to produce food, and to generate income, especially for women who cannot work in artisanal mining site" (Balasha & Peša, 2023, p.2). In addition, traditional agriculture activities are now disregarded in the Copperbelt, where the landscape is highly industrialized and most of the local population engage in mining activity. In any case, the pollution of air, water and soil resulting from mining concession make agriculture a dangerous practice in the region (Balasha and Peša, 2023). As a result, the people to a mining site" are losing their home and main economic activity, without a proper compensation. This process is an obstacle to the development of the country, since the access to education in then restricted. Therefore, the people are more likely to be involved in Artisanal and Small-Scale Mining activity, thus suffering from very little regulated work conditions: "some people who have already lost their livelihoods because of displacement are engaging in illegal lithium mining activities, a predominant social, political, and ecological problem affecting the resource sector in Africa." (Boafo 2024).

c. CRMs policies of the major stakeholders in DR Congo

The Democratic Republic of Congo is a major supplier of CRMs. It accounts for three quarters of the global mining of cobalt, an element that is crucial in the production of lithium-ion batteries (Chandler, 2022; Le Mouel and Poitiers, 2023). As a result of its external policy, China holds a consequent monopoly of the extraction in DR Congo. Out of the 19 biggest mines, China is exploiting 15 (Africa Defense Forum, 2023). This is a result of the successful Belt and Road Initiative (further referred as BRI) that the country has been leading for more than a decade (BRI Office, 2017).

However, the significance of the Democratic Republic of Congo's mineral reserves

compels major demanders of Critical Raw Materials (CRMs), such as the European Union (EU), to pursue strategic partnerships with this resource-rich nation. The EU, however, faces substantial challenges in exerting influence over China, which poses difficulties in ensuring adherence to European sustainable mining standards. Notably, the Democratic Republic of Congo exports 99% of its extracted cobalt directly to China, thereby limiting the EU's ability to leverage Congolese resources in alignment with its regulatory frameworks.

On the other hand, this geopolitical battle led on the Congolese ground is problematic for the national enjoyment of local resources. The Congolese constitution states that "Any act […] which has the consequence of depriving the Nation […] of all or parts of their means of existence drawn from their natural resources or their wealth, is established […] as the crime of pillage punishable by the law" (Cabinet du Président de la République, 2011). However, the enforcement of this constitutional principle is complicated, as it faces internal and external challenges. On one hand, the Congolese officials are lacking skills, resources and motivation (Kabila, 2015). On the other hand, the deal the DR Congo has signed with China, combined with Chinese legislation, makes it difficult for the Congolese government to fully govern its resources.

i. The European Union

The European Union has been developing a specific policy regarding CRMs since 2008, when it issued its "EU Raw Materials Initiative" (EU RMI). This policy aimed at securing a safe supply chain of CRMs, and a global competitiveness of the EU, in the context of the acceleration of the green and clean transition (Girtan, Wittenberg and Grilli, 2021). The text was then supplemented by the first list of CRMs, published in 2011. This first list of CRMs included 14 materials, and a recommendation to update the list every three years (European Commission, 2022b). The most recent European list of CRMs includes 34 materials (Grohol and Veeh, 2023), which highlights their growing importance in the industry along with the growing precarity of their supply chain.

To always secure CRMs, and pursue the objectives of the original 2008 EU RMI objectives of ensuring "fair and sustainable supply of raw materials", fostering

“sustainable supply of raw materials within the EU”, and boosting “resource efficiently and supply of secondary raw materials” (Girtan, Wittenberg, et Grilli 2021, p.1) have been strengthened over the year, with the development of the “Raw materials diplomacy” (European Commission, 2024). The Raw materials diplomacy is defined by the European Commission as “reaching out to non-EU countries through strategic partnerships and policy dialogue” (European Commission, 2024). Specifically focusing on CRMs and as an illustration of the CRM diplomacy in practice, the EU is also signing Memorandums of Understanding (MoU) with resource-rich countries. Since 2021, the EU has thus signed 12 partnerships on raw materials with Canada and Ukraine (2021), Kazakhstan and Namibia (2022), Argentina, Chile, DRC, Zambia and Greenland (2023) Rwanda, Norway, Uzbekistan and Australia in 2024 (European Commission, 2024).

The Raw materials diplomacy constitutes the first pillar of the EU Raw Materials Strategy, issued in 2011. In this context, the EU has forged strategic partnerships with countries such as Canada, Japan, and Australia, aiming to create a more reliable and ethically sourced supply chain (Vivoda, Matthews and McGregor, 2024). These partnerships are designed not only to secure access to critical raw materials but also to promote environmental and social standards in mining practices. Furthermore, the EU has been actively engaging in policy dialogues and international forums to advocate for transparent and sustainable supply chains globally (European Commission, 2024). By aligning its external policies with its internal market needs, the EU seeks to ensure that its industrial base remains competitive while adhering to high environmental and social standards.

The second pillar of the strategy focuses on boosting domestic production within the EU. This involves supporting innovation in mining and recycling technologies, providing financial incentives for sustainable resource extraction, and ensuring that regulatory frameworks facilitate the responsible use of domestic raw materials (European Commission, 2011).

Lastly, the third pillar emphasizes the importance of recycling and the circular economy (European Commission, 2011). By improving the efficiency of resource use and

increasing the recycling rates of critical raw materials, the EU aims to reduce its overall demand for primary raw materials and mitigate the environmental impact of resource extraction.

In parallel, the EU is using its instrument of external policy, the 2021 Global Gateway Initiative, to finance infrastructures in resource-rich countries, following in a way the framework implemented by the 2013 Chinese Belt Road Initiative. The Global Gateway is a direct response to the BRI, with the main difference that the European initiative rests on six value-based pillars. In practice, only projects promoting those values can be financed through the 300 billion € programme: democratic values, good governance, equal partnerships, green initiatives, security, private sector investment (European Commission, 2023c). The Global Gateway thus serves as a framework to secure a CRM supply chain in resource-rich countries, while promoting European values and making sure environmental and human rights standards are respected in the value chain. As an example, one of the Global Gateway flagship projects in DR Congo are the "Strategic partnership on CRM being explored" (European Commission, 2023b).

In 2023, the EU has reinforced its will to secure sustainable supply chain of CRMs by adopting the Critical Raw Materials Act (CRMA). The overall objective of this act is to achieve 10% of domestic demand from domestic mining; 40% of domestic demand from domestic refining; and 15% of domestic demand from recycling. Moreover, the CRMA states that the EU must not cross the threshold of 65% of sourcing one mineral to a single third country by 2030 (European Commission, 2023a). The article 37 of the CRMA further highlights the necessity of partnerships for the security of supply of the EU (Ragonnaud, 2023; Blot, 2024).

ii. China

In China, the natural resources and the mining is administered by the Ministry of Natural Resources. The legal framework for these activities is the Mineral Resource Law from 1986, that was last amended in 2009. In this law, the accent is put on the "exploration, development, utilization and protection of mineral resources and to

ensuring the present and long-term requirements of the socialist modernization" (China Geological Survey, 2013, Article 1). The Mineral Resource Law does not include specific dispositions on the foreign mining practices, as the Article 50 of the law precises that "Whereas there are stipulations prescribed in other laws or administrative regulations governing foreign investment in exploration and mining of mineral resources, such stipulations shall apply." (China Geological Survey, 2013).

China is leading a strict policy regarding CRM, that preserve the domestic production and processing of resources. The first objective of the country is to protect its own domestic supply chain, by taking a "domestic stance and an international approach" (Awuah, 2019). In this regard, the mining of minerals is exclusive to state-owned enterprises, and foreign investment in this sector is strictly regulated on the Chinese ground. In parallel, China is seeking international partnerships in other resource-rich countries in Africa and in Latin America, in order to further establish its monopoly in the field. As a reflection of this demarch, China was the first trading partner of Africa in 2009 (Awuah, 2019).

Regarding Foreign Direct Investment in China, the country has established in 2022 its "Ecological and Environmental Protection Guidelines for Overseas Investment and Cooperative Construction Projects". This initiative highlights the importance of environment protection by the Chinese government. It is indeed clearly specified in the Article 2 of the Guidelines "Enterprises shall consciously fulfil their responsibility for ecological and environmental protection; integrate economic, social and environmental benefits; promote coordinated development of the local economy, society and environment; and promote mutually beneficial cooperation." (Ministry of Ecology and Environment, Ministry of Commerce, 2022). Specifically regarding mining, article 12 states that "Enterprises implementing mining projects shall take effective pollution control measures to control pollutants, especially the emission of heavy metal pollutants; strengthen the comprehensive utilization of solid waste, reducing the amount generated and stored; keep tailings storage, gangue field and other solid waste storage sites reinforced and impermeable to prevent pollution of groundwater; strengthen environmental protection design; reduce ecological damage and land occupation; and

implement ecological restoration and biodiversity protection." (Ministry Of Ecology and Environment, Ministry of Commerce, 2022). This highlights the importance of environmental protection to the Chinese government, who is, in contradiction, ranked 154 out of 180 countries in the Environmental Performance Index (Block *et al.*, 2024).

The Chinese approach to foreign mining is rather guided by strategic policies and bilateral agreements than by a specific legal framework. The 1986 Mining Law indeed only applies to domestic mining, although it influences the external practices of the country. As such, China is leading since 2013 the Belt and Road Initiative (BRI), aiming at financing infrastructures in Africa and Latin America. The overarching goal of this investment policy is to secure access to critical resources, ensure the supply of raw materials needed for its manufacturing and technological sectors, and strengthen geopolitical influence. By investing in infrastructure projects such as railways, ports, and energy facilities, China fosters closer economic ties and dependency, thereby gaining favourable terms for resource extraction and long-term access to strategic minerals. This strategy not only supports China's domestic economic growth but also extends its global influence, positioning it as a pivotal player in the international supply chain for essential commodities (BRI Office, 2017).

Regarding the environmental protection, China's draft mining law revision in 2024 includes a new chapter on "Ecological Restoration of Mining Areas". While this applies primarily for domestic operations, it could influence Chinese companies' practices abroad. This is particularly important as China holds a near monopoly of the cobalt supply chain in DR Congo. In any case, this revision highlights the environmental consideration of the country, supported by the Chinese traditional ethics (Lei *et al.*, 2016). Further than environmental considerations, China implements, by this revision, mitigation measures towards local communities (Yun and Yu, 2024). However, the revision does not include clear standards or guidelines. Unclear standards can thus result in bad implementation at the company's level (Yun and Yu, 2024).

However, the current Chinese legal framework does not mandate due diligence, that would extend to the mineral supply chain for overseas operations. In contrary to the EU,

the Chinese legal framework does not put the emphasis on the protection of human rights. Most of the overseas mining companies are also state-owned corporations, suggesting that their operations are guided by government objectives rather than just commercial interests. Combined with the China's Personal Information Protection Law, data is hard to transfer across borders.

iii. DR Congo

The expansion of the global demand for CRMs and the abundant resources of Africa led the African Union to issue the African Mining Vision (AMV) in 2009. This document provides a framework for ensuring "transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development" (African Union, 2009, p.6). That way, it provides a framework for the national mining policies for African countries. As one of the poorest countries in the world (World Bank, 2024), DR Congo is affirming its willingness to add value to the mined minerals in order to benefit to the country's economy. As such, the Mining Regulations states that 10% of any mining activity has to be Congolese, if it includes more than research and exploration (Cabinet du Président de la République, 2018).

In DR Congo, the mining operations are governed by the ministry of mines, environment and finances, by the governors of the relevant province and by dedicated organisations. The main legislative framework for the mining industry in DR Congo is the 2002 Mining Code, last amended in 2018, and its associated document, the Mining Regulations (2003, amended in 2018) (Ngalula and Mbuyi, 2024). The main objective of the Mining Code reinforced by the 2018 amendment, is to attract investors along with promoting good mining practices. The article 23 details in particular the criteria to be eligible for mining rights in DR Congo: "Any Congolese mining company, international mining company complying with Congolese law or scientific organisation".

The Mining Code and Regulation also puts a special focus on sustainability criteria. State organisation have been set up especially to control the compliance of the companies or organisations to the Congolese standards. In particular, the "Mining Funds

for future generations" (FOMIN) is has been created through the revised Mining Code in 2018. This structure is focusing on managing funds dedicated to the mitigation of environmental issues for individual continuously exposed to mining operations (Ngalula and Mbuyi, 2024). DR Congo is also protecting its natural resources in its own constitution (article 56). This will of conservation of the mineral resource for domestic use is further justified by international regulations, notably in Article XX(g) of the GATT.

To gain more control over the domestic resources, the DR Congo is preparing the creation of an economic space between the DR Congo and Zabia, dedicated for cobalt refining and processing (Gerding, 2023). The construction of infrastructures allowing the refining and processing of minerals would avoid the exportation of copper, cobalt, and other minerals to China, as the DR Congo currently exports the majority of tis copper and cobalt to be processed in China. In 2019, China indeed represented 84% of the DR Congo cobalt's exports (Gichuku, 2023). As a response, African governments have, in the framework of the AMV, implemented a series of export bans since 2022, in the aim of forcing the industries to process the minerals on the country's territory, and thus produce added value in the place the mineral have been mined at.

Regarding the external policies of DR Congo on mining, a cornerstone of the Congolese mining history was the signature of a deal with China in 2008. This agreement, often referred to as the "Minerals for infrastructure" deal, impacted DR Congo further than solely on its mining sector, as it marked a significant shift in DR Congo's approach to foreign investment (Jansson, 2011). Under these $9 billion agreements (reduced to $6 billion in 2009). Chinese companies committed to developing major infrastructure in DR Congo such as roads, railways, hospitals and university. In exchange, DR Congo promised to confer mining rights to the companies to copper and cobalt deposits. Combined with the BRI, China has become the first trade partner of the African continent as soon as 2009 (Awuah, 2019).

This deal also had a consequent impact at the global scale. Indeed, it opened an important channel of cooperation between China and Africa, who thus diversified its

international partnership beyond traditional Western investors. Subsequently, the EU lost a part of its bargaining power in DR Congo to China, leading the EU to react by implementing the Global Gateway, as a response to the Chinese BRI.

As a consequence, the mining policies of DR Congo focus on enhancing domestic beneficiation and local value addition of its mineral resources. This strategic emphasis aims to shift from merely exporting raw minerals to fostering a local processing industry, thereby retaining more economic benefits within the country. This approach not only aligns with DR Congo's goals of sustainable economic development and resource conservation but also reflects broader continental efforts under the African Mining Vision (AMV) to promote self-sufficiency and value creation in Africa's mining sector. By prioritizing local processing infrastructure and partnerships, DR Congo seeks to capitalize on its abundant mineral wealth more effectively while aiming for long-term socio-economic growth and industrial development.

II- Violation of EU standards in the cobalt mining industry

Despite the political will of implementing strict ethical and environmental standards in the Congolese mining industry, their enforcement is challenging. However, these standards are crucial regarding the EU, a big importer of CRMs. The main issue thus comes from the control of China over the mines of DR Congo, along with the weak implementation force of the Congolese state. This section will first present the international regulations and framework regarding the protection of human right and of the environment, before diving into the application (or non-) in the Congolese copper and cobalt industry.

a. international regulations

Several international conventions govern the protection of human rights and the environmental impact of businesses. Specifically, regarding the mining industry, the International Council on Mining and Metals (ICMM) has set a framework aimed at their members to include more sustainability in their activities. The IMCC is particularly

influential on mining company, as it originated as a union between “a small group of mining industry CEOs”, that aimed at transforming the mining industry to make it more sustainable (ICMM, 2024). The ICMM principles, to which the major mining company adhere to on a voluntary basis, are organized under ten main axes. It thus provide a framework for ethical business, to integrate sustainable development in the decision-making process, to respect human rights, and to improve the environmental performance of the member compagnies, among others (ICMM, 2024).

Yet, there is no global framework dedicated to the sustainability of mining emanating from international institutions. This section will thus cover the international and EU regulations related first to the protection of human rights, and second to the protection of the environment that indirectly apply to the mining industry.

i. On human rights

Focusing on human right protection in the mining industry, the relevant international frameworks are mainly drafted by the UN, that has issued its UN Principles on Business and Human Rights in 2012. Those guiding principles are drafted on the basis of the resolution 17/4 of the 16$^{th\ of}$ June 2011, related to the establishment of a global standard for preventing and addressing the risk of adverse human rights impacts linked to business activity. They are built on three pillars: the state duty to protect human rights, the corporate responsibility to respect human rights, and the need for greater remedy for victims of business-related abuses. The corporate responsibility to protect human rights is built upon the rights established in the International Bill of Human Rights, and on the ILO’s declaration on Fundamental Principles and Rights at Work (UN, 2011).

Moreover, the International Labour Organisation (ILO)’s eight fundamental conventions contribute to set a strict framework regarding the respect of human rights in the context of businesses. These formulate the labour standards worldwide. They ensure the freedom of association, the right to organise and collective bargaining, the prohibition of forced labour, the prohibition of child labour, and the abolition of any form of discrimination (ILO 2002).

Another international regulation relevant to the respect of human rights in the framework of the mining industry are the Voluntary Principles on Security and Human Rights (VPSHR). The principles were developed as a "collective effort" by companies, governments and NGOs in 2000. They cover risk assessments, along with companies and public and private security. Since mining companies frequently operate in areas with significant security risk, including local conflict, organised crime, and political instability. The VPSHR provide a framework for assessing and managing these risks in a manner that respects human rights.

More importantly, the OECD has drafted in 2016 a Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. This directive follows the 2010 US Dodd-Frank Act, that aimed at the monitoring and prohibition of the financing of conflicts by the mining industry. Due diligence is indeed a crucial "tool for identifying, assessing and acting upon risks" such as war crimes, forced labour, child labour or human rights violation (OECD, 2016). However, many obstacles come up in the implementation of due diligence chains. Transparency and communication are salient issues in the problematic practices of companies. Moreover, the Due Diligence principles set up by the OECD remain voluntary, thus being less efficient to identify the problematic companies and evaluating their impact.

To tackle this issue, local initiatives are being implemented, to address those challenges. In China, for example, "the Chinese Chamber of Commerce for Metals, Minerals & Chemicals (CCCMC), together with other internationally operating companies, founded the Responsible Cobalt Initiative (RCI) which aims at supporting the implementation of the OECD Due Diligence Guidance in cobalt supply chains" (Barazi et al. 2017, p.5). Moreover, the ICMM provides its recommendation on the "respect [of] human rights and the interests, cultures, customs and values of workers and communities affected by our activities" (ICMM 2024, p.7). Those recommendations include the respect of the UN Guiding Principles on Business and Human Rights and of the Voluntary Principles on Security and Human Rights. The ICMM also promotes the establishment of policies regarding the respect of Indigenous People, that would be impacted by a mining project (ICMM, 2024).

After the conflict minerals issue surfaced in DR Congo in the early 2000s, the European Union mandated mining companies to comply with due diligence obligations in 2017. This initiative applied to every conflict and high risk areas (Bikubanya *et al.*, 2023). However, it was limited in its scope, as it only applies to companies importing the Tin, Tungsten, Tantalum and Gold (3TG), putting aside the copper and cobalt mining industry. The definition of a "conflict mineral" as defined by the European Commission does not strictly apply to cobalt. According to this definition, conflict minerals are those whose trade in politically unstable areas finances armed groups, fuels forced labour and other human rights abuses, and supports corruption and money laundering (European Commission, 2022a) . Cobalt, while primarily sourced from the Democratic Republic of Congo (DRC), is not necessarily implicated in these specific issues as extensively as minerals like tin, tantalum, tungsten, and gold (3TG minerals)

Nevertheless, similar risks arise in the supply chain when it is sourced in DR Congo in the geographical and environmental context of cobalt and copper mining (Barazi *et al.*, 2017). As a consequence, “international cobalt supply chain stakeholders sourcing from the DRC were requested to step up their due diligence efforts in order to manage social problems such as child labour or unacceptable labour conditions.” (Barazi et al. 2017, p.2).

Despite those initiatives, the positive impact of due diligence on human rights compliance is still unclear, if it has an effect at all (Bikubanya *et al.*, 2023). Moreover, the Amnesty International report highlights that “Companies along the cobalt supply chain are failing to conduct adequate human rights due diligence” (Amnesty International et Afrewatch 2016, p.9).

ii. On environmental protection

Environmental protection is the second major impact of the mining industry, that diverges the most with the EU standards in the Congolese copper and cobalt industry. The EU is leading a “clean and green transition”, not only on its domestic territory but also avoiding the delocalization of carbon emissions and avoiding carbon leakage

(European Commission, 2019). With the intensive need of CRMs to lead this transition, there is a big risk of intensive emissions due to the extraction, processing and transport of the minerals imported to the European market. More particularly, the EU has almost no power to control the environmental impact of the mining industry in the DR Congo, of which it sources its minerals, since most of them is owned by China (AFD, 2023), and very few by the EU itself (Andreoni and Roberts, 2022).

In contrast with human rights related regulations, there is no global environmental framework applicable to mining. As such, the environmental standards of mines are regulated by the companies themselves, of the importers' standards and by the local legislation. The Paris Agreement, signed by 196 countries, is providing the general guidelines regarding the environmental impact of mines. According to the International Energy Agency, meeting the Paris Agreement targets will require quadrupling mineral requirements for clean energy technologies by 2040 (IEA, 2022). The lack of framework in this sense is thus urgent to fill, in order to comply with the global climate targets. To solve this issue, the UN Environment Programme is calling for governments, industry, investors, consumers and civil society to work together to agree on harmonized and strengthened principles for mining and the environment to ensure a truly sustainable green transition (UNEP, 2022). However, no framework dedicated to the environmental impact of mines is yet existing to this date.

In order to fill the regulation gap, the International Council on Mining and Metals has provided a series of recommendation in its "Mining Principles", in 2023. Three out of the 10 themes are related to the environment impact of mines: Environmental Performance, Conservation of Biodiversity, and Responsible Production. That way, the institution walls for "continual improvement in environmental performance issues, such as water stewardship, energy use and climate change"; "[contribution] to the conservation of biodiversity and integrated approaches to land-use planning"; and "[the facilitation] and support [of] the knowledge-base and systems for responsible design, use, re-use, recycling and disposal of products containing metals and mineral" (ICMM 2024, p.9-10).

b. Challenges in Safeguarding Human Rights in the Democratic Republic of Congo

In the case of cobalt mining, NGOs have led several investigations, highlighting the precarious working conditions of the workers. The main issues include child labour, hazardous working conditions and impact on the worker's health (Amnesty International and Afrewatch, 2016). The jobs in the mines are highly physically demanding, requiring the "creusers" (i.e. diggers) to go down in dangerous mines that risks to collapse, or the "washers" to bend their body all day long to wash the minerals in the river (Maconachie, 2024).

These issues even more present and less regulated in the artisanal mining operations, that represented between 15 and 20% of the total production of the country in 2015 (Kabila, 2015). The approximation comes from the difficulty of measuring precisely this informal activity, that is in most cases hidden by the buying companies (Banza Lubaba Nkulu *et al.*, 2018).

Despite the contradiction between those effective work conditions and the international legislation on human rights, the loose governance on the Congolese mining sector allows the continuation of those illegal working conditions. Amnesty International highlights that "[t]he DRC Mining Code (2002) and Regulations (2003) provide no guidance for artisanal miners on safety equipment or how to handle substances which may pose a danger to human health, apart from mercury." (Amnesty International et Afrewatch 2016, p.5). In the revised Mining Code of 2018, no provision is made to explicitly ensure good working conditions in the mine, nor to protect the local community from the mines' impact. This gap highlights the vulnerability of workers and local communities to exploitation and environmental degradation. Without explicit provisions ensuring good working conditions and community protection, the potential for abuses and adverse impacts on both people and the environment remains unchecked.

Moreover, the weak Congolese enforcement power also comes from the fact that Congolese officials benefit from artisanal mining, and thus from the illegal working conditions the miners are submitted to. More specifically, the official present on the

mining sites demand illegal payment to the miners, so that they can continue to mine. Since this payment is illegal and is not destined to the state but to the official asking for it, they choose to ignore the unsafe working conditions (Amnesty International and Afrewatch, 2016). As a consequence, the implementation system of the national regulations, implemented and supposedly regulated by the Congolese Ministry of labour, is inefficient.

Moreover, the mining companies operating in DR Congo do not provide basic human requirements, such as the right to drinkable water. According to the RAID report, “none of the mining companies had provided the minimal number of water points required by DRC regulations. Nor did they meet the World Health Organization’s (WHO) guideline of 20 litres per person per day, the bare minimum required for drinking and basic hygiene.” (RAID & Afrewatch, 2024, p.2).

This highlights the ongoing challenges in DR Congo's mining sector where basic rights of miners are consistently overlooked, despite international legal norms and constitutional protections aimed at safeguarding them. The ineffective implementation of national regulations, coupled with corruption among officials benefiting from artisanal mining, perpetuates unsafe working conditions and exploitation (Amnesty International and Afrewatch, 2016; RAID and Afrewatch, 2024). Additionally, the failure of mining companies to provide essentials like access to clean water underscores a broader pattern of neglect toward the well-being of those directly engaged in mineral extraction. These issues underscore significant governance issues within the Congolese mining industry, undermining both the effectiveness of its regulatory framework and its commitment to international human rights standards.

One of the sources of most human rights violation in DR Congo is Artisanal and Small-Scale Mining (referred further as ASM). Artisanal mining, minimally regulated, is also the cause of a significant amount of child labour.

The amount of cobalt issued from artisanal mining can only be estimated. As such, it represented approximatively 15 to 20% of the total cobalt production in the DR Congo

in 2015 (Kabila, 2015). However, ASM represents a serious security risk for the local population, as "The presence of hundreds of diggers and ancillary workers was accompanied by noticeable social disruption, high consumption of alcohol and drugs, prostitution and fights." (Banza Lubaba Nkulu et al. 2018, p.8). Once more, previous literature has found that "the very occurrence of such extreme conditions is indicative of poor governance, on the one hand, and disregard for sustainability by the buyers of the extracted mineral, on the other." (Banza Lubaba Nkulu et al. 2018, p.8). In order to regulate and control ASM, the policy priorities, as identified by Banza Lubaba Nkulu *et al*, "include bottom-up formalisation; more transparent upstream (miners, traders) trade chain; extensive state reform and the creation of competent and corruption-free state agencies in charge of mining, health and the environment. These are prerequisite conditions for a sustainable cobalt to produce our batteries. » (Banza Lubaba Nkulu et al. 2018 p. 9).

To regulate ASM, the Congolese government has established the State-owned enterprise SAEMAPE (Service for Assistance and Supervision of Artisanal and Small-Scale Mining) to oversee and support ASM activities (Ramdass, 2023; Ngalula and Mbuyi, 2024). However, challenges remain in effectively regulating ASM. The government thus tends to overlook informal ASM due to difficulties in regulating this practice (Cao, Sharmina and Cuéllar-Franca, 2024).

c. Environmental Conservation Challenges in DR Congo

The environmental impact of the mining industry in DR Congo is a major concern for the country. The pollution of air, water and soil resulting of the mining exploitations is a great danger for biodiversity, along with the local communities. In particular, the important mines in DR Congo bring issues regarding community displacement, loss of livelihood, health hazards and environment contamination. There is also a threat of conflict between the different mining compagnies, that result in a precarious security environment (Kohnert, 2024).

More specifically on the environmental protection issues, it has been highlighted in the literature that the importance of the CRM in the Sub-Saharan countries, including the

DR Congo, is harmful to the environmental condition of this region (Stein, Bruch and Dieni, 2023; Kohnert, 2024). Land expropriation, pollution and ecosystem degradation are also the consequence of the growing importance of the mining industry in the Copperbelt (Balasha and Peša, 2023). Indeed, the mining of copper and cobalt releases toxic dust, and contaminate the rivers by releasing toxic components, and by washing the minerals directly in the streams (Maconachie, 2024; RAID and Afrewatch, 2024). As a consequence, agriculture around mining concessions cannot be longer developed as the soil is toxic, which poses important economic issues for the local population. Studies have shown that fishes in lakes adjacent to mining towns are contaminated with high levels of cobalt, which is severely dangerous for the consumers (Davey, 2023).

However, the Congolese regulation does not include a dedicated framework on environmental protection for mining companies. There is also a gap in international regulations regarding the sustainability of mining companies. As a consequence, the Congolese Mining Code states that companies are themselves responsible of mitigating their impact on the environment (Cabinet du Président de la République, 2018). This lack of clear regulation implies that mining companies do not feel compelled to follow the due diligence requirements, as no enforcement mechanism is put in place (Bikubanya *et al.*, 2023).

III- Methodology

As analysed in the previous sections, the EU is in a difficult position to ensure the protection of the environment and human rights, two of its core values (European Union, 2012). In order to assess the extension of the violation of those values, this section will investigate the case of the Tenke Fungurume Mine (TFM). Located in the Congolese Copperbelt and owned at 80% by the Chinese company CMOC, this mine illustrates the global issues with the Congolese mining industry. Moreover, the EU is importing copper and cobalt originating from the TFM, since it is one of the most important mine in DR Congo, and that its minerals are processed in China, that supplies the EU in copper and cobalt by respectively 38 and 60 % (Grohol and Veeh, 2023).

a. Relevance of the Tenke Fungurume mine

The Tenke Fungurume Mine (TFM) is located in the Congolese province of Katanga, in the South of the country, at the North of the Copperbelt. The mine covers over 1,500km, and extracts copper (177,956 tons in 2019) and cobalt (16,098 tons in 2019) (China Molybdenum Co., Ltd., 2024a). The objective of the mine is to achieve 400,000 tons of copper per year (Congo Mines, 2022). The TFM is situated on one of the largest deposits of cobalt and copper in the world, the Copperbelt, giving it an enhanced importance not only in the Congolese economy, but also in the global market of cobalt and copper.

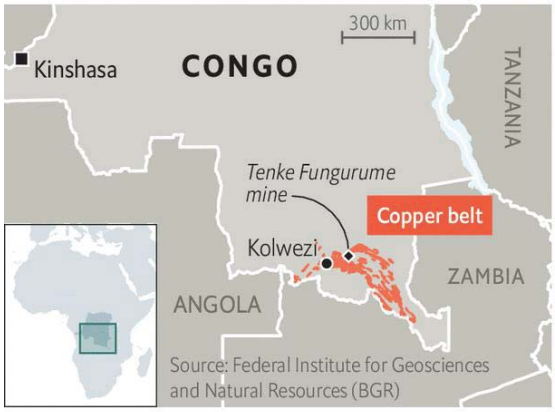

Figure 2: Geographical position of the Copperbelt and of the Tenke Fungurume Mine (Federal Institute for Geosciences and Natural Resources, 2022)

TFM's construction began in late 2006, and was one of the most important private sector project to come to life after the DR Congo's war (1998-2002) (European Investment Bank, 2007; RAID and Afrewatch, 2024). Since 2016, the mine is owned at 80% by China Molybdenum (CMOC), the "second largest cobalt producer and a leading copper producer in the world" (China Molybdenum Co., Ltd., 2024a). The remaining 20% of the TFM is owned by the Congolese's state-owned mining company, Gécamines. This complies with the Congolese's Mining Regulation requirement of at least 10% Congolese property on any mining company exceeding the research and exploration stage (Ngalula and Mbuyi, 2024).

This specific mining site was selected to conduct the case study of this analysis for three reasons. First, the importance of the TFM in terms of mineral resources and production is significant at the global scale. As a consequence, the practices operated in this mine can be generalized with more certainty than with small local mining operations. The size of the mines also comes with more resources on the practices and impact of the

mine, especially as it is mostly owned by one of the global biggest mining companies.

Secondly, China Molybdenum, the owner of TFM, is recognized for its proactive initiatives aimed at sustainability within its operational framework (Neema, 2024). The community strategy objectives of the TFM indeed includes the alignment of the strategy with the local, regional and national development priorities, the answer to fundamental needs of the communities such as access to drinkable water, to health, and to education. The company has also promised to create job opportunities for the local population thanks to professional education, offering easier microcredits, and support agricultural vulgarization. TMF aims to strengthen the capacity of the local community by teaming up with the government and local NGOs (Arnbethnic, 2020).

Last but not least, the TFM is also the first mine to hold the ISO 14001 certification (DRC Mining Week, no date), highlighting its compliance with environmental standards. Moreover, the displayed top priority of the CMOC on their website is to "ensure the safety and well-being of [their] employees, partners and local communities and to sustain a favourable living environmental four our current and future generations" (China Molybdenum Co., Ltd., 2024a). However, the CMOC nor Gécamines are members of the International Council on Mining and Metals and are thus not compelled to follow its guidelines.

Finally, the fact that the TFM is owned at 80% by China and 20% by the DR Congo displays an example of the global geopolitical CRM dynamics that are happening at a broader level. Since the cobalt and copper extracted in the TFM is then exported to China to be processed, the EU likely imports copper and cobalt from the TFM. The analysis of this case thus allows to better understand how the EU values are respected, if respected at all, in a Chinese exploitation in DR Congo from which the EU sources its material.

b. Methodology

The case of the TFM is strongly relevant to the analysis of the influence of the EU's dependency on CRMs towards its commitment to human rights and environmental

protection. This analysis will thus aim at evaluating the compliance of the human right and environmental standards of the EU by the TFM. In appearance, the CMOC is indeed proud of its human rights and environmental policies and highlights its actions in this regard. However, the practices on the ground differ, as several NGOs have reported (Amnesty International and Afrewatch, 2016; Amnesty International, 2023; RAID and Afrewatch, 2024).

In this broader context, it is essential to consider the general dynamics among stakeholders involved in the mining of critical raw minerals. This allows to better understand the decisions of policymakers in the Congolese state, in the CMOC, and better comprehend the revendications of the civil society. Generally speaking, the stakeholders around the mining of critical raw minerals include the mining compagnies and the government representatives on one side, opposed to NGOs and the civil society (Kamenopoulos, Shields and Agioutantis, 2016). In the case of the DR Congo, the government is supporting the development of mining activities in the country, under certain conditions. The conditions are detailed in the Mining Code and Mining Regulations, although the enforcement of the principles is challenging. On the other side, NGOs such as Amnesty International, are reporting on the degraded working conditions of the workers in the mine, as they often time are informal and without respecting national nor international laws and requirements. Finally, the civil society is perceiving the mining industry as both an economic opportunity and a threat to their health and to their right to a safe and clean environment (Kennes, 2024).

Mining compagnies are indeed looking for profit and thus for more resources entailing the opening of new mining projects. The government, especially in DR Congo, are generally supporting those projects as it represents a socioeconomic growth opportunity for the country (Boafo *et al.*, 2024). Regarding the civil society, they are suffering from the environmental damages made by mining companies which impact their health, economic activity in the case of farmers. Moreover, when they are employed by mining companies, work conditions are often disregarding international standards (Amnesty International and Afrewatch, 2016).

i. Criteria of analysis

Mining projects have strong repercussions on miners and workers. Working conditions may not comply with international regulations, surrounding communities that might face force displacement or intensive pollution of water, land and air that can cause serious health issues (Amnesty International and Afrewatch, 2016; Kohnert, 2024). This phenomenon is particularly visible in the Copperbelt, given the extended number of mining operations. Those projects thus trigger diverse NGOs, such as Amnesty International and RAID. Both NGOs have led investigations on the mining industry's practices in DR Congo, featuring human rights and environmental protection violations (Amnesty International and Afrewatch, 2016; Amnesty International, 2023; RAID and Afrewatch, 2024).

The issues of human rights and of environmental protection have that way been framed as the most impactful resulting of the mining activities in the Copperbelt in this investigation. In regard to the European values, those two issues are also at the core of the European preoccupations. Both of them constitute a pillar for the Global Gateway Initiative, and one of the dimensions of the European Green Deal include "preserving and restoring ecosystems and biodiversity" (European Commission 2019, p.3).

Drawing from the most salient issues in the Congolese mining industry, the analysis of the Tenke Fungurume Mine will be led on five dimensions:

1. Labour standards of the mine;
2. Relation with Artisanal and Small-scale Mining (ASM) and child labour;
3. Health of the workers;
4. Environmental impact of the mine;
5. Repercussions on local communities.

These aspects of the human and environmental impact of the TFM will provide a comprehensive view of its sustainability. Dimensions 1 and 2 will specifically investigate the working conditions in the TFM, by comparing the policies of the CMOC with the report from NGOs, and second-sourced interviews from workers. Dimensions 4

and 5 will investigate the environmental impact of the TFM, by evaluating the environmental impact of extracting copper and cobalt more broadly. Moreover, the interviews and NGOs reports will also be used to compare the CMOC environment policy with the testimony from workers and inhabitants of the mine's area. Criteria 3 combines both the human right protection and environmental protection assessment by evaluating the health and safety of the workers, along with the mechanisms provided by the CMOC to mitigate this issue.

ii. Limit of the scope

The main source of analysis for this investigation are reports from various NGOs, along with official reports from China Molybdenum. However, the reports issued by the mining companies can diffuse false or manipulated information. This is a common practice among mining companies, as they try to hide their actual environmental and humanitarian impact (Kamenopoulos, Shields and Agioutantis, 2016). More precisely, those misinformation tend to happen more during the communication between different stakeholders like the company and the state for instance. Altered communication can then result in inaccuracies or misconceptions in the final reports. This issue can be exacerbated in cross-cultural situations where differences in language, ethics and habits constitute another obstacle to easy flowing communication. In some cases, intentionally misleading information or a lack of information might even be shared (Kamenopoulos, Shields and Agioutantis, 2016).

Another limit of this investigation is the significant gap between what the companies promise on their website, and what really happens in the mines. As highlighted by Maconachie, "Look at [the companies'] websites and you'll probably see a massive section devoted to sustainability and community-building. On the surface, this may provide reassurance to a consumer or policymaker. But all those efforts don't seem to be making a difference to those at the bottom of the chain […]." (Maconachie, 2024). Moreover, as Blot highlights, there is a wide gap between the compagnies' formal ESG (Environmental and Social Governance) commitments, and their effectiveness indicators to monitor their progress (Blot, 2024). Transparency on specific criteria is also an issue, as they often do not comply with the due diligence requirements or

enforce their own policies (Amnesty International and Afrewatch, 2016).

As a result, the information shared by CMOC doesn't always match what NGOs report. This investigation will rely on both sources to clarify differences and give a more accurate assessment of the TFM's environmental and humanitarian impacts. However, the operational practices and initiatives outlined in CMOC's policies and statements may not align with actual implementation, potentially obscuring underlying realities. NGOs have conducted detailed reports only on limited aspects of TFM's operations, which could lead to gaps in the analysis due to potential limitations in the information available.

IV- Case study: the Tenke Fungurume mine

a. Labour standards

According to the CMOC's policy on employment, international standards of employment are respected. The CMOC indeed commits to equal employment, to a comprehensive compensation program, to career development opportunities, freedom of association and collective bargaining, along with employee communication (China Molybdenum Co., Ltd., 2024b). These commitments align with the eight fundamental ILO Conventions, to the Universal Declaration of Human Rights (article 23), and to the OECD Guidelines for Multinational Enterprises. On the ground, the CMOC and Gécamines are, however, facing a number of complaints regarding the protection of human rights (Houreld and Bashizi, 2023; RAID and Afrewatch, 2024). For example, The Washington Post has interviewed workers of subcontractors of the joint venture stating that "they were often expected to work for months without a day off and that their pay would be docked if they took one. One man said he had worked 14 straight months at the Tenke Fungurume mine without a weekend off." (Houreld and Bashizi, 2023).

Contradictorily, the TFM's commitment to the protection of human rights is further promoted by the company by their participation to a training on the Voluntary Principles on Security and Human Rights in 2022. The formation's organising

institutions highlight the complex security and human rights situation on the mining site, “with the presence of multiple actors such as security personnel, mining police (PMH) and national army deployed in Katanga” (Geneva Center for Security Sector Governance and International Committee of the Red Cross, 2022).

In the context of the DR Congo, the TFM thus provides proof of its commitment to human rights and labour standards. Contrary to a large part of the mining industry in DR Congo, the TFM’s policies are strict in terms of labour standards (Amnesty International and Afrewatch, 2016). The Due Diligence Report of Human Rights and the activities of the CMOC further confirms its compliance with international and European standards (Geneva Center for Security Sector Governance & International Committee of the Red Cross 2022; Triple R Alliance 2023). However, the general context of Chinese companies and of the general environmental of the mining industry in DR Congo lead to think that real, or comprehensive information on the respect of those standards might not be entirely disclosed by the CMOC and by Gécamines.

However, NGOs report, and the investigation led by the Washington Post have demonstrated that despite the apparent commitment of CMOC and Gécamines to strict human rights policies, the workers are still suffering from disastrous work conditions. By refusing to pay the workers if they take a day off (Houreld and Bashizi, 2023), the TFM is breaching the international regulations on human rights protection.

b. Child labour and ASM

First regarding child labour, the TFM policy on human rights includes dispositions on the prohibition of child labour: “The Company will […] ensure fair treatment and work conditions for all employees, including rights to freedom of association and collective bargaining, an prohibit forced, compulsory or child labour” (Tenke Fungurume Mining, 2023).

Artisanal mining, that is more likely to be home to child labour, involves around 10,000 people in the area of Tenke and Fungurume. However, the 2023 report on Human Rights Due Diligence of the TFM states clearly that “TFM does not source its copper or

cobalt from ASM [Artisanal and Small scale Mining] and has strict product stewardship processes in place to ensure that illegal mining products do not enter its production or value chain" (Triple R Alliance 2023, p.2). However, according to the due diligence report, the interaction with ASM is both very likely to happen and very likely to have a serious impact on the people. Although the TFM does not source its cobalt from it, the inevitable presence of ASM of the TSM mining concession represents a security risk for the TSM workers (Triple R Alliance, 2023).

To mitigate the risk of child labour, TFM has taken proactive measures such as donating school supplies to 20,000 children within its mining concession area in 2019. The company also highlights on its website that it "has built 17 schools in its concession, granted scholarships […] with a list of 160 students. By promoting the access to education to children in the region, children are less likely to be involved in mining activities. Moreover, since 2010, the CMOC hosts 90 trainees each year within the framework of its professional internship program" (China Molybdenum Co., Ltd., 2019). As a consequence, if the students consider engaging in mining due to the economic opportunity, the CMOC provides a regulated framework to do so, and avoid the working conditions of ASM.

In conclusion, while challenges persist, TFM's initiatives underscore a commitment to combatting child labour through educational support and structured employment opportunities, aiming to break the cycle of poverty and exploitation in the mining sector.

c. Health

Cobalt is toxic, and it has been repeatedly demonstrated that the high doses of cobalt, to which miners are exposed, can induce diseases or morbidities in the heart, lungs, blood and typhoid (Banza Lubaba Nkulu *et al.*, 2018). As one of the most important mines in DR Congo, the workers in the TFM do experience health issues caused by prolonged contact with cobalt (Amnesty International and Afrewatch, 2016; Houreld and Bashizi, 2023; Maconachie, 2024). An investigation led in the Kamilombe mine in 2021, which includes interviews with workers and inhabitants around the concession, constitute a

striking proof of the impact cobalt has on human health: “People living near the mines display raised levels of cobalt in their urine and blood, and oxidative damage to DNA in children related to cobalt toxicity has been demonstrated” (Maconachie, 2024). Moreover, the investigation led by the Washington Post highlights a testimony from a former truck driver at the TFM stating that “I was in good health before this job… Now I can’t walk well, I can’t work, I can’t provide for my family” (Houreld and Bashizi, 2023). However, there is still no specific clause in the policies of the CMOC nor of Gécamines to provide medical assistance to workers or related to general human rights linked to the environment.

In response to the health challenge, the TFM highlights on its website its contribution to the health of the Congolese citizens. During the pandemic, the TFM collaborated with the Chinese embassy in DR Congo and the Congolese government to donate $400,000 and testing tools, along with lending an ambulance and promoting epidemic prevention and control measures to communities (China Molybdenum Co., Ltd., 2020). However, this contribution to a global health environmental is not related to the direct impact of the mine, nor directed especially towards the workers in the TFM.

Despite an apparent willingness of the company to provide support to the local community, there is a lack of tools in the TFM’s policy to mitigate the health issues directly caused by the mine. This highlights a significant gap in TFM’s approach to corker health protection. In the Human Rights Due Diligence report, the criteria “Safe and healthy working condition” is classified as having a serious potential impact on people, despite a very little likeliness that the impact may occur (Triple R Alliance, 2023).

d. Environmental impact of the mine

The 2024 CMOC Environmental Policy defines the code of conduct of the company on climate, water, biodiversity, waste and pollution. They thus commit to apply “the principles of sustainable development throughout the life cycle of [their] mining operations” and maintain “an active grievance mechanism and resolution processes to address complaints related to the environment” (China Molybdenum Co., Ltd. 2024,

p.4). Gécamines, the second owner of the mine, is the Congolese operator of the concession and thus refers to the Mining Code and to the Mining Laws in terms on environmental protection (Gécamines, 2024).

The cobalt industry is heavily pollutant in the air, water and soils. Workers and local communities are highly exposed to toxic dust (Maconachie, 2024), unclean water (RAID and Afrewatch, 2024) and cannot continue their agricultural activity as the soil also contains toxic elements (RAID and Afrewatch, 2024). A mining operation as large as the TFM thus necessarily implies a negative impact on the environment, that can only be mitigated by the operating company, following the Mining Code (Cabinet du Président de la République, 2018).

The water pollution resulting from copper and cobalt extraction is due to the extractive process of cobalt, that includes the washing of the mineral, in the river. Moreover, the processing of the two minerals generates tailings and wastewater that can contain heavy metals and other toxic substances. If not effectively managed, these can leach into local water bodies, contaminating rivers, streams, and groundwater. Another impact of cobalt and copper mining on water pollution is the acid mine drainage. Indeed, exposure of sulphide minerals in the mined ore to air and water can result in the formation of sulfuric acid, which can leach heavy metals from the surrounding rocks. This phenomenon severely impacts the water quality, making it harmful for aquatic life and unsafe for human consumption.

This represents a consequent issue in the region of the TFM, that is home to almost 300,000 inhabitants. The environmental impact of the mine jeopardizes their health through the consumption of unsafe water. Moreover, another risk on water coming from an important mining concession like the TMF are the chemical spills, that are used in the extraction process. Chemicals enter water systems, causing immediate and long-term environmental damage.

In the case of the TFM, the CMOC has included several guidelines regarding the management of these risks in its environmental policy. They promote the “ongoing

monitoring of water use and quality in the areas where [the CMOC] operates to prevent water contamination and ensure that local communities have reliable access to clean water" (China Molybdenum Co., Ltd. 2024c, p.7). However, several scientific studies have proven that rivers, lakes, streams groundwater and wetlands close to cobalt and copper mine are heavily polluted by the mining activities. (RAID and Afrewatch, 2024). Testimonies from the community living around the Tenke Fungurume mining site are included in those scientific studies. More precisely, they report the destruction of their agricultural production due to the acid waste, that has been released in the nearby river. However, when investigated by the RAID, CMOC has denied every accusation of environmental damage. More precisely, the company estimates that its ISO 14001 certification is enough justification for them not harming the environment. However, 68% of the complaint received by CMOC is related to environmental damage, which has numerous consequences on the local community's life, as highlighted in *Figure 3*.

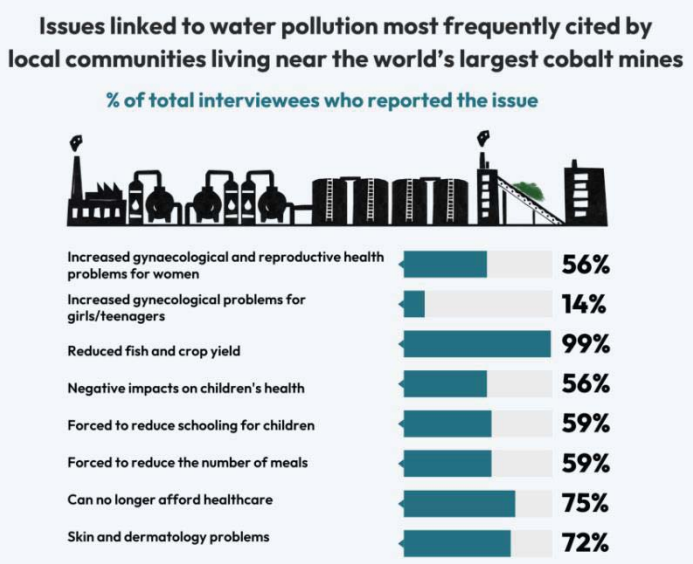

Figure 3 : Environmental issues reported by the interviewees

e. Repercussion on the local population

The TFM is located, as its name indicate, between the two localities of Tenke and Fungurume. The population is estimated to be of around 290,000 inhabitants (Triple R Alliance, 2023). The pollution of the air, the water and soil have a strong impact on the local community, who suffers from a contaminated environment. This has strong impact on the health of inhabitants, who complain from nose bleeds, fertility issues or

dermatology problems, as *Figure 3* displays.

These issues have caused the relocation of 1,500 families by the CMOC, who used to live in a perimeter inferior to 1,000m to the TFM (Maheho, 2024). This decision to relocate the local population occurred in May 2024, following several months of accusation against the Chinese company for environmental contamination (Maheho, 2024). Indeed, "CMOC said that health risks associated with water pollution are not caused by TFM's activities and thus "not relevant to TFM.""(RAID & Afrewatch, 2024, p.80). However, according to the Congolese Mining Code, companies are responsible to mitigate the environmental damage and human rights violation. The denial of responsibility by CMOC was thus a disregard for their legal and ethical obligations, highlighting the challenges in enforcing accountability within the mining industry. In March 2024, the CMOC recognized its responsibility in the environment contamination by accepting to relocate the local population. In compensation, homeowners were given 5,000$, and 3,000$ were allocated for tenants (Makal, 2024).

The conditions for relocation are, according to the TFM, compliant with the guidelines from the World Bank, the International Finance Corporation (IFC) and from the ICMM. As such, the process "focuses on minimizing involuntary resettlement, ensuring fair compensation, and restoring livelihoods to pre-displacement levels or better" (Tenke Fungurume Mining, 2024). However, the respect of the national and international conditions for relocation can be questioned. Numerous cases of protests have indeed been investigated, as the conditions of relocation are often not respected. Indeed, Makal (2024) has pointed out that "According to Afrewatch, TFM did not consult Kabombwa residents and did not inform them of these environmental impacts, as required by mining regulations. Testimonies from Kabombwa residents corroborate this accusation. However, several documents are available online, including an analysis of the 2007 environmental impact study and the 2022 addendum, which indicates that the first health problems began to appear as soon as the lime plant was commissioned in 2020 — four years ago." (Makal, 2024).

V- Results and discussion

a. Discrepancies Between EU Standards and Environmental Practices at TFM

The results of the analysis led in the previous section evidences the efforts of the TFM to comply with international principles, and thus European standards in terms of human rights and environmental protection. However, the analysis manifested a significant gap between the human rights protection and the precise measurement and mitigation of the mine's environmental impact. Furthermore, the absence of comprehensive environmental impact assessments on air, water, and soil pollution, coupled with a relatively lenient environmental policy at CMOC, reflects a significant lack of genuine effort in addressing environmental concerns. This is a recurrent issue in the mining industry, as the RAID report has concluded: "Mining companies routinely promote the cobalt from DRC's industrial mines as being "clean", "sustainable", and free from human rights and environmental harms. Yet our research reveals that water pollution and water depletion from mining operations are severely affecting the lives of hundreds of thousands of fence line residents, infringing upon their right to clean water and their right to a clean, healthy and sustainable environment." (RAID & Afrewatch, 2024, p.1).

The TFM is submitted to the regulations of the Mining Law. According to the legislation, companies are the only one responsible of the mitigation of their own damages, including environmental pollution and human rights violation (Cabinet du Président de la République, 2018). However, the operations of the TFM highlights a significant gap in the CMOC policies to truly stick to international regulation, as they pretend, they do.

The implementation of stringent environmental regulations is crucial for compliance with European Union (EU) standards, particularly concerning the mining of cobalt and copper, which are notoriously environmentally harmful processes. The EU's commitment to mitigating environmental impacts is illustrated by mechanisms such as the Carbon Border Adjustment Mechanism (CBAM). Although cobalt and copper are often imported from China, where they are processed, this regulation underscores the EU's broader concern with the environmental ramifications of mining activities,

including those in the Democratic Republic of Congo (DRC). Expanding on this perspective, it is crucial to consider the environmental impact of mining operations within the DRC. The extraction of cobalt and copper in this region is associated with significant ecological degradation, including deforestation, soil erosion, and water contamination (Maconachie, 2024; Makal, 2024; RAID and Afrewatch, 2024). Therefore, the enforcement of rigorous environmental standards is essential not only for compliance with international regulations but also for safeguarding the local ecosystems and communities affected by mining activities. This holistic approach to environmental protection in the mining industry is critical for achieving sustainable development and minimizing the adverse ecological footprint of mineral extraction.

Regarding the protection of human rights, the TFM is ranked as one of the best mines in DR Congo (Arnbethnic, 2020; Congo Mines, 2022). The ISO 14001 certification of the mining concession internationally recognises the compliance with international labour standards in the mine. Moreover, the Due Diligence report of TFM underscores its stringent policy against interactions with artisanal and small-scale mining (ASM), thereby bolstering the mine's efforts to uphold its reputation and commitment to preventing human rights violations.

However, regarding the environmental performances of the mine, in-depth examination of CMOC's 2020 ESG Report revealed that "68% of the complaints received by TFM [in 2020] were in the environment category, primarily regarding the discharge of water from the mine pits."400 (RAID and Afrewatch, 2024). Significant policy is absent from the CMOC, leading to a highly damaging impact of the TFM on the local population's health and well-being.

b. Examples of Western initiatives to counterbalance China's influence

The TFM is a speaking example of the Chinese monopoly on the copper and cobalt supply chain. As a mining concession owned at 80% by the Chinese CMOC and 20% by the Congolese Gécamines, the materials mined in the TFM are directly imported in China to be processed, and exported to demanding powers, including the EU (China

Molybdenum Co., Ltd., 2024a).

In order to conserve their competitiveness and power in the CRM mining against China, Western countries, that include the EU, are forming alliances to balance China's weight in the supply chain. More than securing a safe supply chain that would not be impacted by the geopolitical tensions with Beijing, the lack of compliance with human rights and environmental protection operated by China in the DR Congo further represents a reason to act the decoupling from China by the EU.

Focusing on the EU, the Union does not hold enough geopolitical weight to comply China to respect its values. However, the Union is implementing more initiatives to provide incentives to the Congolese companies to sign contracts with the EU rather than with China, despite the legal and national context reason that might complicate the process. With a view over the whole supply chain of CRMs, initiatives are also blooming in the view of reshaping the global order dynamic in favour of the Western's interest (Vivoda, Matthews and McGregor, 2024).

This is the example of the Global Gateway Initiatives that was discussed in this analysis, created to offset the Chinese Belt Road Initiative. Moreover, a recent publication by the European Parliament further demonstrates the will of the EU to deepen its alliance with the RD Congo, by prospecting the construction of a cobalt refinery in the DR Congo (Van Wieringen, 2024).

i. Mineral Security Partnership

Enlarging to the Western countries, the Mineral Security Partnership (MSP) was launched in 2011 as a trilateral initiative between the EU, the US and Japan. The main objective of the partnership is to promote cooperation in the CRM issue, as a result of the increasing of their strategical importance. The overarching goal of the initiative is to counterweight China in the processing and supply of CRMs. However, the members of the MSP acknowledge the complexity of a total independence from China. When the MSP meet, once a year, they particularly advocated for a balanced approach that

includes engagement and cooperation among them and with China, where feasible (Girtan, Wittenberg and Grilli, 2021; Vivoda, Matthews and McGregor, 2024). The MSP, used as a framework for cooperation, is impactful in the policymaking process regarding the CRM in the member states. It coordinates the investment in strategic opportunities, set up standards

Although the MSP was initially launched by the US, the initiative became the MSP forum in 2024, thus integrating the CRM Club initiated by the European Commission. The CRM Club is an initiative aiming at "strengthening global supply chains, strengthening the World Trade Organization (WTO), expanding its network of Sustainable Investment Facilitation Agreements and Free Trade Agreements, and combating unfair trade practices" (European Commission, 2022b). This platform serves as a forum for industry leaders, policymakers, researchers, and civil society organizations to address the challenges and opportunities associated with securing a sustainable supply of critical raw materials for the European Union. It thus further reflects the willingness of the EU to gain more competitiveness in the CRM race, by playing a leading role in the cooperation initiative within its Western Allies.

ii. Lobito Corridor

In order to safeguard the Western interests, the EU, the US and other western countries are forming more and more alliances to secure a diverse supply chain in CRM with like-minded countries. As a consequence in DR Congo, the EU has a strong strategic interest to increase its partnership with the DR Congo, so that the country ceases to export the majority of its cobalt to China. Instead, the strategic interest of the EU lies in the shifting of the cobalt and copper supply chain to refine the minerals in the DR Congo's own territory to create added value and develop the fragile economy of the country. This way, the country will be in a position to directly provide its copper and cobalt to the EU, which will reduce the EU dependency of China. Another example of this geopolitical shift are the investments made in the Lobito Corridor.

The Lobito Corridor is 1200km of railway infrastructure, that allows the transportation of minerals from Zambia to the Angolese coast, through the DR Congo, creating and

important open point of the African mining industry on the West African coast. The EU is also contributing to this infrastructure, in the framework of its Global Gateway Initiative (European Commission, 2023b).

The TFM is not specifically on the Lobito Corridor's planned route but is intended to be included in its overall project scope. The Lobito Corridor aims to enhance transportation for several mining regions, and including Tenke Fungurume would improve access to international markets for its copper and cobalt production, especially given the importance of the mine in the mineral production.

The two examples of the Mineral Security Partnership and of the Lobito Corridor are very different in nature, but both aim at the same goal: conserving the competitiveness of the Western powers against the rise of China. As also shown by the case study of the TFM, Western and European values cannot be effectively promoted in CRM-rich countries such as DR Congo if China controls the majority of the supply chain. Those efforts thus also have an ethical dimension, from the Western point of view.

c. Challenges in EU Efforts to Influence Conditions in the DRC Amidst Global Competition

In the continuity of the conclusion of the last sub-section, the EU's ability to effectively promote human rights and environment protection in the DRC is constrained by geopolitical realities and competition from other global powers, mostly including the Chinese dominance. As a consequence, the EU's policies in the DRC implemented through the Global Gateway Initiative have had mixed success in achieving their objectives, as their positive contribution to improving conditions on the ground are hard to distinguish.

It is not in the scope of action of the EU to implement external policies that would interfere with the local and non-EU national authorities. As such, the EU can only implement policies making it more competitive than China internally speaking, allowing European compagnies to take more power on the Congolese ground, thus ensuring a secure supply chain while enforcing the EU values in DR Congo, as the

compagnies would be submitted to the European legislation.

As a consequence, the EU is acting rather reactively regarding policies on CRM (Carry, Godehardt and Müller, 2023). This presents a risk to secure a safe value chain on CRM, as China largely dominates the EU controlling minerals not only on its rich territory, but also in third countries. However, decoupling completely from China is not the only option, as it is also possible to achieve sustainable and secure supply of CRM through cooperation frameworks. If the geopolitical and economic situation is deteriorating in China, projections anticipate favourable relations between the EU and China, who will seek to conserve its competitiveness. As a result, the EU will gain more power over Beijing to promote its human rights and sustainable standards (Carry, Godehardt and Müller, 2023).

d. Critique of the EU's action

Despite the global recognition of the sustainable standards applied by the EU as beneficial, since it aligns with international regulations and goes sometimes further, the European approach is also causing criticisms on the ground. This is also the case with China and its BRI, that constrain the states to debt (Hurley, Morris and Portelance, 2019). However, China has built a trusting relationship with African state based on a South-South cooperation rhetoric, in opposition to the colonial history that Africa has with Europe (Andreoni and Roberts, 2022; Vivoda, Matthews and McGregor, 2024). This section will dive into the source of the criticism towards the EU approach in DR Congo.

Regarding the promotion of the EU's core values in DR Congo, the establishment of due diligence chains reflects a neo-colonialist dynamic (Vela Almeida *et al.*, 2023). As a fact, due diligence is its own business, that is thus seeking to sustain its own industry. However, this process comes at the expend of the actual impacted communities: "Affected communities are seldom consulted, let alone able to actively participate in the design of due diligence programmes" (Bikubanya *et al.*, 2023).

The definition of the EU on the international stage is often discussed (Vlassenroot and

Arnould, 2016), but the value-based foreign policy led by the Union results in the EU being a moral intervener. As detailed in the previous section, this way of doing aligns with the colonial background of Europe, who is now eager to source CRM in Africa, but with very specific standards that might be inadequate with the local context. « The EU justifies its proactive stance as a force for good while positioning others as continuously in need of catching up" (Vela Almeida and al. 2023). This moral posture is to be understood in the framework of the climate-leader role of the EU, with an ambition to have a global impact (European Commission, 2019). However, the efficacity of this approach is questionable on its relevance and impact on the ground. This highlights the tensions within the external policy of the EU, where geopolitical obligations come in opposition with the ethical and environmental standards of which the EU stands for.

Despite the approach of the Global Gateway Initiative, that favours cooperation between the partner countries and the EU, the perception of the EU is still disparate. The result of a perceived colonialist approach on the ground and of its moral intervener is a sentiment of mistrust towards the EU in Africa. Particularly in DR Congo, the Foreign Minister has expressed strong criticism of the EU's approach, regarding the agreement between the Union and Rwanda. More precisely, he stated that "The EU's complicity in the exploitation of our resources and Rwanda's aggression against our nation cannot be overlooked." (Châtelot, 2024). As a result, some view the DRC as a "laboratory for EU crisis management" (Vlassenroot and Arnould, 2016, p.4), suggesting that the EU's actions are seen as experimental rather than consistently effective. Moreover, there are perceptions of ambiguity in the EU's stance, with some Congolese officials calling for more concrete actions and sanctions against aggressors rather than just declarations.

Conclusion

This thesis argued the lack of compliance with its own human rights and environmental standards by the EU, in the framework of the supply chain of CRMs sourced from the Copperbelt.

Through this analysis, the compliance of central European values like human rights and

environmental protection have been analysed in the case of a mining exploitation on the Copperbelt. The legislative and policy framework of the EU, China and of the DR Congo is a clear representation of the importance of environmental and human values in the main country's stakeholders in the mining industry of the DR Congo. As such, we observe that the EU is the most value-based actor out of all of them. Through the guidelines of its Global Gateway Initiative, the added value in the country of action plays a central role.

The pressing challenge for the EU in the geopolitical race for CRM is thus to find a balance between two highly strategical elements. On one hand, it needs to secure its access to CRM, at the risk of losing its credibility as a self-proclaimed "climate leader". On the other, the current supply chains of CRM challenge the EU ambition of being a normative actor that promotes the protection of human rights and of the environment at the global scale.

In the case of the Tenke Fungurume Mine in DR Congo, the mine presents a generalisable case due to the significant production of the mine. The analysis found that despites apparent good efforts on human rights protection, the official CMOC policies, reports and news hide the lack of essential mitigation measures, such as an integrated health system for the workers. Regarding the environmental protection, no measure nor responsibility is taken by the CMOC to mitigate the impact of the mine. This has severe negative consequences for the local population, that is suffering from contaminated air, water and soil, which puts an end to their traditional agricultural production. Alternatively, the local population is relocated, generating issues and complaints of improper compensation by the inhabitants.

The case of TFM highlights a striking lack of enforcement by the Congolese government. Consequently, TFM operations fail to meet European standards for human rights and environmental protection, even breaching international regulations. As the copper and cobalt extracted by TFM are sent to China, from which the EU imports one-third and two-thirds of these resources respectively, the EU can face accusations of greenwashing. However, the pervasive influence of China in the Congolese mining

industry severely limits the EU's ability to intervene. The EU's lack of competitiveness against China hinders its capacity to effectively implement due diligence measures, despite established European regulations.

Finally, the dependency on CRM and consequently on China for the supply in CRM needs to open a debate on the consumption of those minerals. Scientific publications have already found that it is unlikely that the EU ever manages to be self-sufficient. Investing recycling and in domestic mines will not be enough to meet the European demand. However, given the EU-China relationship and the regulatory framework in DR Congo, it seems unlikely that the EU manages to source its CRM while fully sticking to its core values. In this scenario, a question on the credibility of the EU is becoming crucial: How can the EU promote its core principles in third countries when the Union itself does not respect it? The only real sustainable solution needs to be the reduction of the European demand, and a policy emphasis put on circular economy.

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