

**Multinational Mining Firms in the Democratic Republic of the Congo:  
Assessing Impacts on Human Rights and Economic Development  
O'Neill Undergraduate Thesis  
Laila Hamid  
Spring 2024**

## **Abstract**

Cobalt and copper are necessary inputs in rechargeable batteries, which are crucial to support growing EV demands and a transition to a low carbon economy. Currently, almost 70% of the world's cobalt comes from the Democratic Republic of the Congo, where there are growing concerns about the impact of mining on the country. Chinese and Canadian companies operate some of the largest copper-cobalt mines in the country. The entry of multinational corporations in the DRC mining sector has been linked to human rights abuses and a lack of transparency in financial dealings, contributing to socio-economic inequalities. Through a qualitative analysis of three mines, this article looks at the formal and informal factors of mining which impact human rights and economic development in the DRC. The findings suggest that Chinese and Canadian mining operations contribute to both improvements and deterioration of human rights and economic development in the DRC.

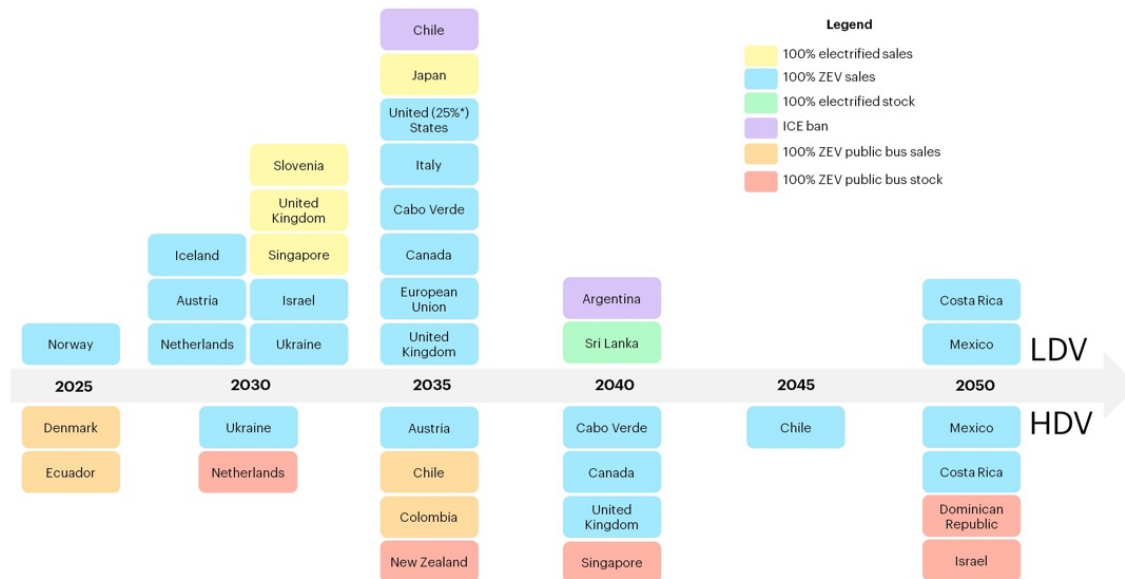
## Introduction

Critical minerals are an essential component in the development of clean energy technologies, such as photovoltaic solar panels, batteries in electric vehicles (EVs), wind turbines, and more. Critical mineral resources are considered essential to the economy in many countries because of national and energy security relevance, but their supply is susceptible to disruptions (American Geosciences Institute, 2024). The criticality of a mineral changes over time, with the changing demands of a country and national goals (USGS, 2022). Mining for critical minerals will become increasingly important and happen at a larger scale as demand for low emission technologies is growing (IEA, 2021). Some of the world's largest mineral reserves are in countries that are less economically developed (UNCTAD, 2023). Historically, mineral extraction in less developed countries has caused environmental damage, harm to local populations, and host countries have not reaped the full benefits of their mineral wealth (Yoshiara & Villalobos, 2024).

Countries across all continents are implementing policies to achieve net-zero emissions, encourage the purchase of EVs and ban or phase-out internal combustion engine vehicles (IEA, 2023). Figure 1 displays zero-emission vehicle targets implemented by various countries. Cobalt and copper are two necessary raw materials for lithium-ion batteries, a crucial technology to support a transition to low carbon emitting energy systems (OPIS Staff Report, 2023). The expansion of EVs is increasing mineral demands. Global forecasts for cobalt predict demand will double by 2030: global needs will amount to 302,000 metric tons, with EV batteries accounting for over half of that figure, at 176,000 metric tons (Cobalt Market Report, 2023; Statista, 2024). By 2035, copper demand is expected to increase by 20%, totaling 30 million metric tons

(Bouckley, 2023). To support global lithium-ion battery demands, estimates reveal that 336 new mines will need to open by 2035 (Benchmark Source, 2022).

**Figure 1:** Global zero-emission vehicle mandates and internal combustion engine bans. From “Global EV Outlook 2023: Policy developments” by the International Energy Agency. 2023.



While more mining is needed to support future technology and energy demands, additional considerations should be directed at mitigating the externalities of mining activities. Mining has been associated with environmental degradation, child labor, and inhumane working conditions (OPIS Staff Report, 2023). Growing demand pressures can intensify these issues if not properly addressed, necessitating more transparent and better governance of mineral supply chains (Morenhout et al., 2023).

The future sustainability of critical mineral mining must further involve the interests of countries where mining takes place. This research will center on the Democratic Republic of the Congo (DRC), where almost 70% of the world’s cobalt, 42% of the world’s tantalum, and 5% of the world’s copper comes from (Andreoni & Avenyo, 2023). Despite assumptions that the

extraction of mineral resources, namely by foreign investment, would drive economic growth in host countries, African nations have not seen a reduction of poverty rates or an increase in sustainable development (Campbell, 2007). In 2022, the DRC was the world's largest cobalt exporter and third largest copper exporter (OECD, 2021; World Economic Forum, 2022). The DRC's exports in 2022 were worth \$28.5 billion dollars, with copper and cobalt making up 90% of that value (Observatory of Economic Complexity, 2023). Mining in the DRC has presented concerns in both the formal and informal mining sectors. Reports have indicated there are safety issues across the industry, a lack of regulation and oversight on mining operations, the persistence and growth of socioeconomic inequalities, and unethical behavior is seen at mining sites (ISS Insights, 2023). The DRC's vast copper and cobalt reserves are an attractive investment for multinationals around the world; however, the DRC needs to see better governance of these relationships to ensure the sustainability of the country's mineral supply (Gulley, 2022).

**Figure 2:** Map of the DRC highlighting the Central African Copper Belt. From “The Central African Copper Belt” by Geology for Investors. 2016



Chinese and Canadian firms have noteworthy positions in the DRC's mineral market. Both countries operate mines producing copper or cobalt in the DRC, have made vast investments in infrastructure, and mine projects and have left a significant footprint on the country. This study seeks to assess how practices by Chinese and Canadian mining companies impact human rights and economic development in the DRC. Existing literature examines the characteristic of Chinese investments, historical Canadian mining practices, and how both countries are trying to secure a dominant position in the global critical mineral supply chain (Executive Research Associates, 2009; Abadie, 2011). Further research is needed to evaluate what influences both positive and adverse outcomes in the DRC and other resource-rich developing countries that encourage mineral extraction. Firms from these two countries were selected due to their extensive large-scale mining operations. The relationship between mining firms and their impact on foreign countries will be explored through a qualitative analysis of empirical research, government documents, and other supporting sources. Formal and informal institutional factors of mining are expected to have an impact on human rights and general economic development in the DRC, but variations in specific outcomes are expected for each countries' involvement.

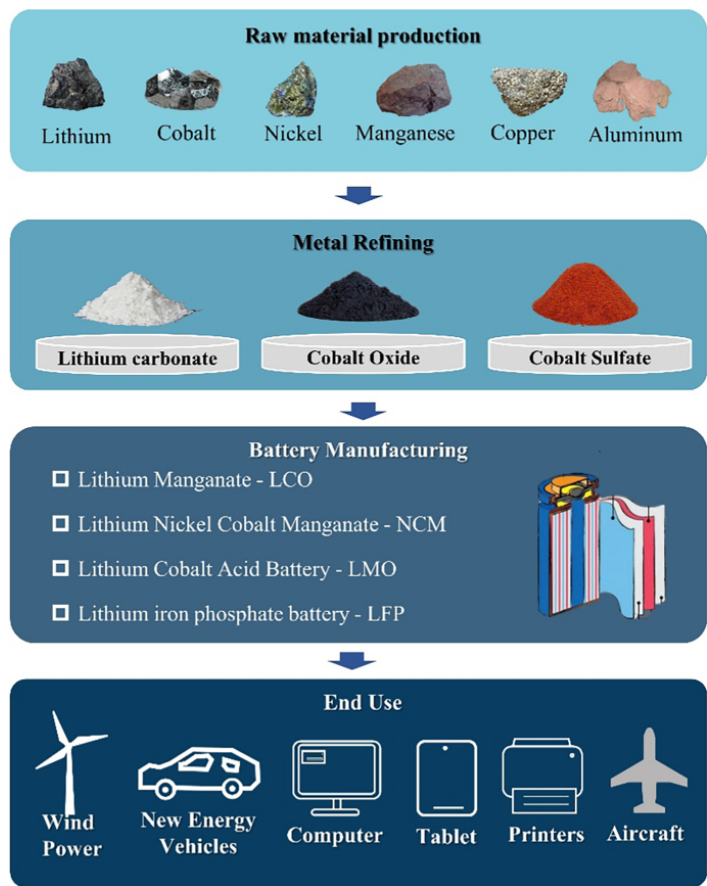
## **Literature Review**

### *1. Background*

The supply chain for critical minerals can be viewed in four stages. Figure 2 shows the stages of the supply chain for lithium-ion batteries, from mineral extraction to end uses. The focus of this research will be on the first stage, mineral production. Demand for clean energy technologies requires the discovery of new mineral resources and development of reserves

(Pradip et al., 2019). However, the impact of historical and current mining practices must be considered to improve the future of mineral extraction projects. Mining practices have led to the displacement of indigenous communities, human rights abuses, ecological destruction, the rise of economic inequities for local communities, and worsening conflict or violence in mining regions (Moran et al., 2014; Hodge, 2014).

**Figure 3:** Supply Chain of Lithium Ion Batteris, From “The security of critical mineral supply chains” by D. Shiquan and X. Deyi. 2023.



The actors involved in the mine lifecycle include mining companies and exploration firms. Mining companies range from “global diversified miners,” firms that operate across wide

geographic regions and mine multiple mineral types, to “intermediate” or junior miners, artisanal miners, and governments (Humphreys, 2014). The world’s largest mining companies are typically publicly traded companies, apart from a few state-owned firms, such as China Nonferrous Metals Mining Corp (Humphreys, 2014). A key distinction for mining actors is between mineral resources and mineral reserves. Resources refer to mineral concentrations in the Earth that are predicted to be economically viable as determined by geological evidence, but have not been mined (Boliden, n.d.). Reserves are the economically mineable part of a measured resource, and deplete each year with mining activities (Boliden, n.d.). In terms of copper and cobalt, cobalt is primarily produced as a byproduct of copper or other minerals, explaining the relationship between their reserve locations. Exploration firms, along with mining companies, are key market players that search for mineral resources and evaluate the economic feasibility of mining projects.

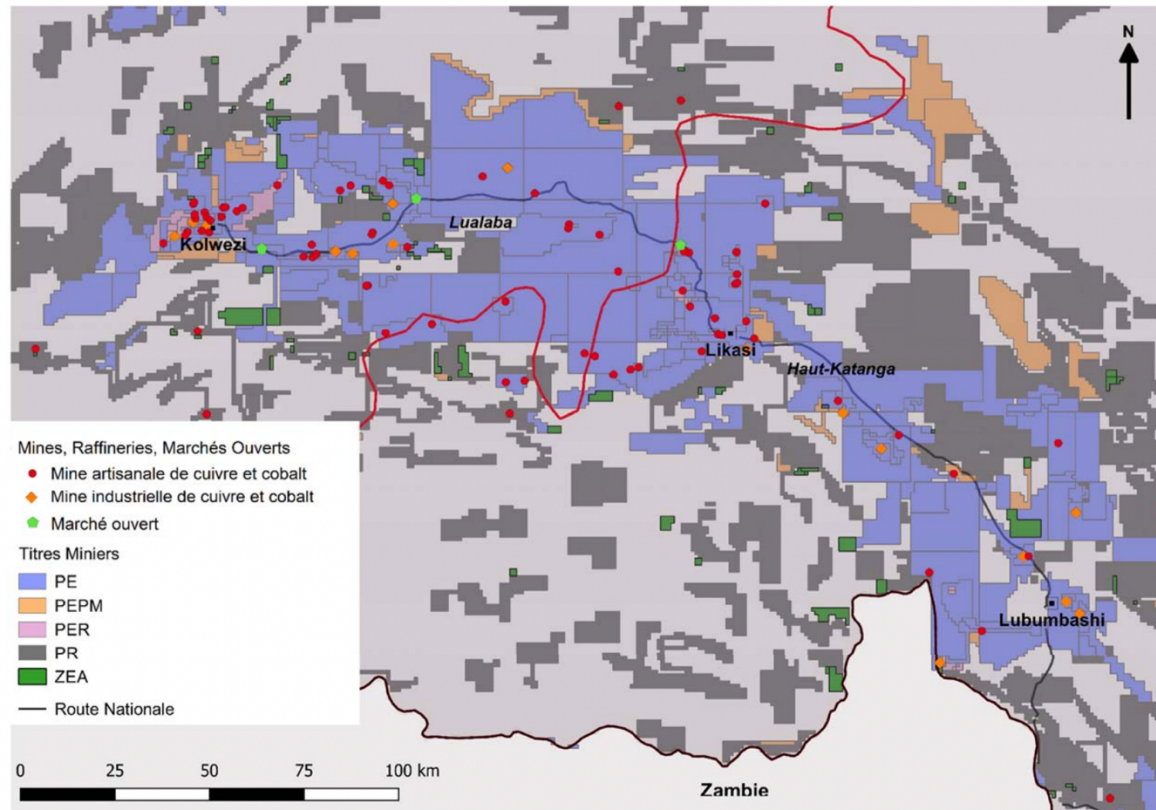
A few market and nonmarket factors impact the ability of mining producers to develop a project. Humphreys (2014) categorizes these constraints as natural, economic, and institutional. Similarly, Dou et al., (2023) find that economic, environmental, political, and social factors impact mining. Examples of constraints in the DRC include political instability, lack of oversight of mine-related financing, and lack of needed infrastructure to support mining. Regardless of these constraints, the fact remains that the DRC holds 80 million tons of copper reserves and 4 million tons of cobalt reserves (USGS, 2022; Pistilli, 2022). In 2002, shortly after the end of the Congolese Civil War, the Congolese mining code was reformed, to further incentivize and encourage foreign investments, and the reforms were successful in achieving that goal (Global Business Reports, 2020). In 2018, the mining code was reformed again, to better serve the interests of the DRC (Global Business Reports, 2020). Mineral exports represent 90% of the



DRC's economy, and engagement by foreign mining companies has arguably increased the economic development of the country (Bolton, 2023). Despite this, the DRC remains one of the poorest countries in the world and the mining industry has faced serious allegations of human rights abuses and malpractice.

While the industrial, or formal, mineral market is the focus of this analysis, an informal mining sector exists as well. Estimates indicate that artisanal mining contributes between 15% to 30% of the DRC's cobalt production (Nkulu et al., 2018). However, there is a lack of official statistics concerning artisanal mining's contribution to copper and cobalt production (Gerig et al., 2020). Generally, artisanal miners do not have operating licenses, work in hazardous conditions, sell their minerals below market prices, and the practice is characterized by human rights abuses (Pact, n.d.). Industries, including mining and technology companies, may contractually exclude minerals sourced from artisanal sites. However, the intersection between artisanal minerals and minerals from multinational-owned sites are numerous in the DRC (Soguel, 2023). While the Congolese government is attempting to regulate artisanal miners, an investigation by the International Institute for Environment and Development (IIED) and Africa Resources Watch (AFREWATCH) found uneven effectiveness of these policies, and ultimately the continuance and growth of illegal cobalt trading (Umpula et al., 2021). The Haut-Katanga and Lualaba provinces are home to most of the world's copper-cobalt reserves, and cities such as Kolwezi and Lubumbashi are important hubs for artisanal miners (Gerig et al., 2020). Trading practices are poorly regulated, so artisanal minerals can enter industrial supplies on site or at refineries (Williams et al., 2021).

**Figure 4:** Map of artisanal and industrial mining sites in the Lualaba province. From “Cartographie de l’exploitation minière artisanale de cuivre et du cobalt dans les provinces du Haut-Katanga et du Lualaba en République Démocratique du Congo” by Bundesanstalt für Geowissenschaften und Rohstoffe. 2019.



China has a noteworthy position in the global mineral market: it controls about 60% of the world’s mineral production and approximately 85% of the world’s processing capacity (Glaser & Wulf, 2023). The Chinese government has continued to foster its dominant role through policies such as the Belt and Road Initiative (BRI), the countries massive infrastructure investment initiative across multiple continents (Bride et al., 2023). BRI has allowed state-owned or managed mining companies to increase their ownership share and investment in mineral developments (Wang, 2024). In fact, state-owned companies have ownership positions in mining

companies in five continents, and in the DRC, Chinese-backed companies have stake in 15 of the 19 cobalt producing mines (Castillo & Purdy, 2022). In the first half of 2023, the country's mining-related foreign investments totaled USD 10 billion, indicating the continued development of the country's foothold in foreign natural resources (Nedopil, 2023). China's dominance raises concerns about energy security risks for dependent nations, as well as the opportunity to establish supply chains that produce less pollution and uphold human rights standards (Castillo & Purdy, 2022).

Canada also plays an important role in the critical mineral supply chain. The Canadian Critical Mineral Strategy, released in 2022, supports the country's vision for research and development, accelerating project development, and engaging in international activities as they relate to the critical mineral value chain through large funding efforts (IEA, 2023). The policy also aims to elevate Canada's position in the global cobalt supply chain, primarily by encouraging the growth of domestic mining operations and boosting certain technology industries to offset China's predominant influence in the supply chain. (WSJ Custom Content, 2022). In addition to the expansion of domestic policy, Canada's Toronto Stock Exchange is home to 75% of the world's extractive industry multinationals (Abadie, 2011). The foreign mining assets of publicly listed Canadian companies were worth \$214.7 billion in 2022 (Government of Canada, 2024). While recent policies indicate that the country is attempting to implement more sustainable and ethical practices, past Canadian foreign investments have been exposed for human rights abuses and malpractice (Deneault, 2008).

## 2. Theoretical Framework

Institutional economic theory looks at markets as a system of formal and informal organizations which impact the provision of a good (Dimmelmeier & Heussner, 2016). Douglas North (1991) broadly defines institutions as human created constraints that attempt to create order and reduce uncertainty by structuring political, economic, and social interaction. Institutional economic theory categorizes institutions as formal and informal. Formal institutions are “constraints” which are specific or codified, and include laws, contracts, or governments (Kaufmann et al., 2018). Informal institutions are not always clearly defined and may be considered as the inherent way things works. Informal institutions can include social norms, religion, or belief systems (Dimmelmeier & Heussner, 2016). Formal and informal institutions exist side-by-side, and thus the performance of a market is best explained when the two are considered together (Kafouros et al., 2022).

Formal institutions that impact the mineral market include the legal or regulatory environment, labor laws, contracts, and financial transfers. Laws and regulatory procedures, in the DRC, China, and Canada, exist which govern the development of a mining project. These factors can impact what company is granted a permit to develop a mine at a specific site, what environmental, social or governance rules must be upheld during the mine’s development and operation, and what national interests are promoted during mining (Humphreys, 2014). Labor laws are also influential on mineral markets. Congolese labor laws mandate minimum safety requirements for miners and require union representation for firms with more than 10 companies (although the implementation and effectiveness of unions in DRC mines is not consistent) (Geenen, 2020). Labor protections are also a growing point of discussion as human rights groups have exposed multinational mining companies of human-rights abuses in multiple DRC mines (Amnesty International, 2023). Contracts are enforceable agreements between two or more

actors involved in a mining project. In the DRC, joint-venture contracts dictate ownership of the mining site, where minerals go once mined, and how much revenue each partner is entitled to. Lastly, mine financing is a formal constraint considered. Multinational firms mining in the DRC secure funds for their mining operations through state-backed financing initiatives or by listing on stock exchanges, for example. Thus, stakeholders relevant to these financing efforts may influence the development of a mine and its operations, which can subsequently impact local communities, mine workers or the DRC economy. Mine financing may also offer benefits to the DRC, in the form of infrastructure loans or financial aid. Formal institutional factors by both Chinese and Canadian mining operations are expected to have an impact on human rights and economic development in the DRC.

**Table 1:** Formal Factors Influencing the Cobalt Market in the DRC

<b>Formal Factor</b>	<b>Description</b>	<b>Example</b>
<b>Legal/ Regulatory Environment</b>	Any law which governs the operation of a mine.	Mining Code of the Democratic Republic of the Congo.
<b>Labor Laws</b>	Congolese-based laws mandating the treatment of formally-employed workers.	DRC Penal Code or Canada's Responsible Business Conduct Abroad Strategy.
<b>Contracts</b>	Legally recognized agreement between two parties involved in operation of a mine.	The Sicomines, the Somidez or Kamoia joint ventures.
<b>Financing of mining</b>	Loans, grants or other funds which are directed to the mine or the DRC.	TSX financing or Sicomines loans.

Informal institutions refer to norms and customs that regulate socio-economic outcomes in a market (Casson et al., 2009). Informal institutions yield significant power over markets in developing countries and intersect with formal regulations to influence outcomes (Casson et al., 2009). In the context of mining, these factors include corruption and social conflict. Corruption is the abuse of entrusted power for private gain (Transparency International, n.d). Corruption has long been a characteristic of the mining industry and has been an issue for the DRC given the country's long history of foreign involvement and civil conflicts, which have contributed to the mismanagement of state resources (Lee-Jones, 2020). A Transparency International report concludes that corruption exists at all levels of society in the DRC, and ranges from petty bribes, political patronage, and illicit financial transfers (Lee-Jones, 2020). Social conflict refers to situations where two groups oppose each other. In the mining industry, social conflict can occur between the mining corporation or national government and impacted interest groups. Conflict can arise due to inadequate consultation with affected communities, concerns from environmental advocates about the environmental and health impacts of mining, global pressure for more responsible business practices, and an unequal distribution of socioeconomic benefits within the host country (Purdy & Castillo, 2022). Informal institutions play a large role in shaping outcomes of the mining industry, considering many of the DRC's formal institutions are not effective (Zerrougui, 2018). Informal institutional factors by both Chinese and Canadian mining operations are expected to have an impact on human rights and economic development in the DRC.

**Table 2:** Informal Factors Influencing the Cobalt Market in the DRC

<b>Informal Factor</b>	<b>Description</b>	<b>Example</b>
<b>Corruption</b>	Abuse of entrusted power for personal gain.	Bribes to public officials.
<b>Social Conflict</b>	Disagreement between individuals or groups due to differences in interests, beliefs or goals.	Conflict between mining companies and government over policies that impact mining operations.

To explore the research question, “how do practices by Chinese and Canadian mining companies impact human rights and economic development in the DRC?” a qualitative analysis following the theoretical framework will be conducted. It is expected that Canadian firms will adhere to the constraints of formal institutions and contribute to better human rights outcomes. Alternatively, Chinese firms may engage in more informal practices which may result in less favorable human rights outcomes but better economic development outcomes.

### *3. The Congolese Mineral Market*

Major deposits of copper, cobalt, diamonds, gold, tantalum, tin and more exists in the DRC (BGR, 2021). The country’s Mining Code of 2018 governs the industry today by regulating mining operators when it comes to licensing, subcontracting, taxes, and customs (EY, 2018). La Générale des Carrières des Mines (Gécamines) is a private company that has been pivotal in privatizing the once publicly managed mineral sector of the DRC (Investing in Africa Mining, n.d.). The company is often viewed as a parallel state actor, a non-governmental institution which performs activities typically associated with governments, such as granting mining licenses,

collecting mining revenue and determining how revenue is used (Stainer, 2010; The Carter Center, 2017). Despite numerous reports of irregularities with Gécamines' operations, multinational firms continue to develop mining projects in partnership with the company (Global Witness, 2017).

Chinese investment in the African continent can be traced back to the late 1990s when the country pursued its “Going Out” strategy, an attempt to secure access to raw materials that would support the domestic economy (Executive Research Associates, 2009). While some economists consider foreign investments in developing countries a key method to increasing the economic development of these places, Chinese investments have also raised concerns regarding the bad governance of mining operations, corrupt business practices, the unequal distribution of mining gains and whether mineral resource consumption is efficient in the DRC (Maizza-Larrarte & Claudio-Quiroga, 2019).

Canadian involvement in the DRC mining sector began in the 1990s, when the election of the new Congolese President Laurent-Désiré Kabila signaled the end of an era characterized by state-owned mining assets and the beginning of the sector's privatization (The Carter Center, 2017). During this time, Canada saw its foreign mining assets flourish (Abadie, 2011). Beginning in 2007, the Congolese government began reviewing many of its mining contracts with foreign companies, given a desire to make mining more beneficial to the DRC and address governance concerns (IPIS, 2008). This review of mining contracts saw the end of many Canadian mining projects, with Ivanhoe Mines being the sole Canadian company with copper assets in the DRC today (The Carter Center, 2017). Given that much of Chinese involvement in the DRC commenced after 2007, the review of mining contracts did not significantly impact projects with Chinese involvement. Canadian companies are being considered leaders in



environmental, social and governance (ESG) principles. Historically, however, Canadian companies have been connected to controversial and harmful practices in the Congolese mining industry, and there are still more recommended ESG measures these companies can take to safeguard the future of mining in the DRC (PwC, 2024).

## **Data and Methods**

Formal and informal institutions are expected to impact human rights and economic development in the DRC. This study employed a qualitative analysis approach using a comparative case study format to explore the impact Chinese and Canadian firms have on these outcomes. Data was collected using a close reading of secondary sources, including government documents, existing literature, reports, case studies, expert analysis and more.

Human rights refer to principles or norms that are considered essential to all humans, regardless of their background, and should be protected. To measure the impact of formal and informal institutions on human rights, the International Council on Mining and Metals (ICMM) definition of human rights will be used. The ICMM is a global industry association that brings together various actors to promote sustainable development in the mining sector. In the organization's "Mining Principles" publication, human rights performance expectations are defined by 9 points, including respecting worker rights by not employing child or forced labor, avoiding the involuntary displacement of communities, and properly remunerating employees with fair wages that adhere to local law (ICMM, 2023) (see Appendix A for a full list of the ICMM's Human Rights Expectations). Economic development refers to efforts aimed at creating a healthy economy by creating and retaining jobs and providing a stable tax base in a community (IEDC, n.d.). The International Institute for Economic Development (IIED) looks at mining and

its impact on economic development in their research report “Breaking New Ground: Mining, Minerals and Sustainable Development.” The IIED reports that mining should improve economic development in a country by increasing employment (directly and indirectly); generating new infrastructure; leading to the development of new skills and businesses at the local level; stimulating the economy through backward and forward linkages; improving the country’s currency through foreign investments; and generating revenues for corporations and governments (IIED, 2002).

The following cases are selected as a representation of industrial miners and their respective copper-cobalt mines in the DRC. Industrial mining refers to companies which operate under the regulation of government-issued mining rights or permits, therefore excluding some discussion about artisanal mining. Selected Chinese cases are focused on state-owned assets, as this is representative of the countries approach to mining. While China does have a private sector, and notable private companies operate mines in the DRC, such as China Molybdenum, the state (or public) sector has grown substantially and most private businesses are connected to the state, mainly through direct equity ties (Huang & Veron, 2023; Bai et al., 2020). Canadian mining companies are listed on the Toronto Stock Exchange, and while there are multiple Canadian companies mining in the DRC, only one currently has copper assets. All three mines are in the Lualaba Province<sup>1</sup> where most of the DRC’s, and the world’s, cobalt comes from (Earthworks, 2020). Lualaba is in the Center African Copperbelt, a key region in copper and cobalt production (Taylor et al., 2010).

---

<sup>1</sup> Historically, the Lualaba province was a part of the larger Katanga province, which existed from 1966 – 2015. It is located in the southern region of the country. (SOURCE).

## 1. Chinese Mining Projects

China Nonferrous Metal Mining (CNMC) and the China Railway-Sinohydro consortium are the two cases selected to evaluate Chinese mining and its implication on the status of human rights and economic development in the DRC. Both companies are under the State-owned Assets Supervision and Administrations Commission of the State Council (SASACS).

### *China Nonferrous Metal Mining (Deziwa Mine)*

China Nonferrous Metal Mining (CNMC) has ownership of the Deziwa Copper-Cobalt Mine, a joint venture run through the subsidiary Société Minière de Deziwa (Somidez). Production at the mine began in 2020, and the Deziwa deposit is estimated to hold 4.6 million tons of copper and 420,000 tons of cobalt (Bujakera, 2020). CNMC has 51% ownership and Gécamines 49% (Bujakera, 2020). Deziwa has long been considered Gécamines' flagship project, with an estimated 4.6 million tons of copper reserves located at the site (Reuters, 2014). Unable to finance production on their own, Gécamines relied on a partnership to bring in the revenues it needed (The Carter Center, 2017).

### *China Railway and Sinohydro Consortium (Sicomines)*

The China Railway-Sinohydro consortium owns has ownership of the Dikuluwe Copper-Cobalt Mine (also known as the Sicomines copper-cobalt mine), a joint venture through the subsidiary Sicomines. The Chinese consortium has 68% ownership and Gécamines has 32% (Jansson, 2013). In 2007 the Chinese companies behind the Sicomines consortium and Gécamines signed a deal that is still considered the “deal of a century” given its massive spending on infrastructure (Maizza-Larrarte & Claudio-Quiroga, 2019). Production at the mine

began in 2015, and estimates place total copper and cobalt reserves of the site at 6.8 million tons (Landry, 2018).

### 1. Canadian Mining Project

The Canadian case is Ivanhoe Mines, the only Canadian company with copper mining assets in the DRC. Ivanhoe is listed under the Toronto Stock Exchange and is thus subject to the rules of the TSX and Canadian corporate law. The Kamoa-Kakula project comprises of the world's largest undeveloped high-grade copper discovery (Amos et al., 2018). Copper reserves are approximately 42 million metric tons (NS Energy, n.d.). Ivanhoe has ownership of the Kamoa-Kakula Copper Complex (Kamoa-Kakula) through its subsidiary, Kamoa Holding Limited (Ivanhoe Mines Ltd., 2023). In 2015, Ivanhoe announced Zijin Mining's acquisition of Kamoa Holding Limited, at 49.5%, ushering in a new partner in the Kamoa-Kakula Complex, which has benefited massively from the investment (Fasken, 2015). This places Ivanhoe's share of the project at 39.6%, Zijin Mining owns 39.6%, and Gécamines owns 20% of the project (Ivanhoe Mines, 2023). Kamoa and Kakula are two separate, but adjacent properties. The Kamoa deposit was discovered in 2008 and the Kakula deposit was discovered in 2016, and production of the entire site began in 2021 (Ivanhoe Mines, 2024).

### **Analysis**

The following analysis will discuss how formal and informal factors impact mining operations by Chinese and Canadian multinational firms. Ultimately, these factors are difficult to discuss independently as formal and informal institutions in the DRC are connected in many ways.

## ***Formal Institutions***

The following analysis will focus on formal institutional factors that may impact the outcomes of human rights and economic development in the DRC. Formal factors impacting Chinese mining firms are strongly influenced by state policy and the following discussion is applicable to both CNMC and the Chinese Consortium. The discussion of Canadian mining and formal factors is focused on the corporate framework which forms Ivanhoe Mines. Additionally, both Chinese and Canadian mining operations in the DRC are subject to Congolese laws and similar formal institutions; however, the effectiveness of these regulations and the prevalence of corruption (to be further explored in the informal institutional section), gives way to disparities in implementation.

### **1. Chinese Multinational Firms Formal Impact**

The legal environment governing the operations of Chinese mining firms can be characterized by the country's "no strings attached" policy. The policy focuses on distributing financial aid to countries but does not stipulate political or economic conditions onto the country receiving funds (Marysse & Greene, 2009). Concerns have arisen regarding the transparency, accountability levels, and the extent of China's influence on partner countries through these agreements (Marysse & Greene, 2009). State-owned mining companies operate under the visor of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) (Shankleman, 2008). Even though Chinese state-owned enterprises (SOEs) have developed to operate as profit seeking corporations, they are driven by domestic policy and state expectations or demands. Within the last decade, SOEs have seen policy and SASAC guidelines demand an improvement in their corporate governance and subsequently, their environmental

and social standards (Shankleman, 2008). Chinese mining operations have thus implemented project feasibility studies, better compliance with local laws, and philanthropic projects, but critics point to the lack of proper revenue management processes at a corporate and state level (Shankleman, 2008). Revenue management is the process of establishing transparency and accountability for revenue streams in the mining industry and can impact the proper flow of funds to its intended recipient (EITI, 2023). When these funds are not properly managed, revenue that should have been directed to the state goes missing and is not able to fund social programs or reach citizens (Readhead, 2018). Chinese mining companies are making historic investments and in the DRC that total billions of dollars. While companies have begun to implement environmental and social standards, regulation has yet to address the lack of transparency in mining operations and the lack of accountability when corruption arises (Shankleman, 2008).

The financial strategy of Chinese mining firms also impacts mining operations. In the DRC, Chinese firms have focused on the country's need for infrastructure, which is significant given the long impact of civil wars and political instability (Kafarhire, 2019). Chinese companies and their revenue sources (e.g., the Chinese Export-Import Bank) are backed by the state government. The Chinese government has clearly outlined an objective of securing access to raw materials, thus encouraging investors to make riskier project investments, especially if the potential for mineral access is present (Marysse & Greene, 2009). Additionally, Chinese investments do not attach political or human rights conditions, unlike many of their Western counterparts (Kafarhire, 2019). State aid or loans have been commonly used by the DRC to fund infrastructure projects, such as hospitals, roads, or transportation systems (Putzel & Kabuyaya, 2011). Chinese financing strategies in the DRC can contribute to significant infrastructure

developments, but concerns remain about improper and corrupt funding schemes as well as the limited improvement in the DRC's financial status (Ross, 2018).

Contracts are typically formed through joint ventures. Chinese joint ventures typically issue loans and investments in mining operations that guarantee the company rights over the mining site, tax exemptions, revenue from mineral sales, or a combination of the three (Putzel & Kabuyaya, 2011). This strategy ensures that Chinese firms have significant influence and stake in the mining operation.

The legal framework which is relevant to labor practices by Chinese companies mining in the DRC includes ratified international standards, Congolese law, and Chinese labor laws (RAID, 2009). While both countries have ratified international conventions, such as those from the International Labor Organization, proper enforcement mechanisms are lax, and violations of laws are not always addressed (Privacy Shield Framework, n.d.). Additionally, DRC labor laws do include provision for health and safety standards, proper compensation, sick-leave, maximum work hours and more, but proper enforcement of these laws is not effective and is uneven across the industry (Department of Commerce, 2023). Chinese mining deals have brought local jobs, such as those for infrastructure projects or mining, to the DRC and contributed to economic growth (Valerio, 2024). However, opportunities for increasing skills and job promotion are limited, accountability for adhering to human rights is of growing concern, enforcement of safety standards is lax, and there is limited accountability for corruption (RAID, 2009; Wang & Zhao, 2019). Additionally, industrial mines have been reported to purchase and export cobalt from artisanal miners, who use exploitative labor practices, such as child labor (Amnesty International, 2023). It is important to note that it is difficult to trace the presence of artisanal minerals in the supply chain and which companies purchase these minerals.

## 2. Canadian Multinational Firm Formal Impact

Canadian mining firms in the DRC are governed by federal corporate laws, stock exchange requirements, company practices, international conventions, and Congolese law (ECGI, n.d.). One law that governs Canadian businesses in the DRC is the Corruption of Foreign Public Officials Act, which makes it a criminal offence to bribe foreign officials to gain an advantage in the development of business (GAN Integrity, 2024). Few other laws govern corporate activities abroad (Goitom, 2017). Additionally, most corporations will adhere to Congolese legal statutes, such as the DRC's Criminal Code, which outlaws forced labor, certain forms discrimination, and sets standards for health and safety (Privacy Shield Framework, n.d.). Despite these protections, the Criminal Code does not establish proper enforcement and monitoring mechanisms, and child labor, discrimination and hazardous work conditions persist across mining sites in the DRC (Privacy Shield Framework, n.d.). While an extensive legal and regulatory framework may govern domestic Canadian operations, operations abroad require stricture scrutiny by the law (Torys, 2024).

Canadian financing in the DRC mineral sector is mainly an objective of the corporate entity that operates there. Canada's Toronto Stock Exchange holds most of the world's publicly traded mining corporations (Invest in Canada, 2024). Ivanhoe, the Canadian corporation of focus, is listed on the TSX, OTCQX Best Market (Over The Counter Quotation Exchange) and Frankfurt Stock Exchange (Ivanhoe Mines, 2023). The company's listing on multiple stock exchanges allows it to raise capital and increase their liquidity from multiple sources, leading to more available cash to finance projects (Price, 2023). Investments by publicly traded firms are also impacted by their perception of risk in a country, including political instability, lack of developed



infrastructure, and the impact of poor governance, which may impact the willingness to develop a project given concerns over its profitability (Henisz & Zelner, 2010). Canadian law mandates that corporations release detailed spending reports and other financial disclosure statements each year (Government of Canada, 2023). Despite the general notion that Canadian law governs corporations to a high degree, mining corporations on the TSX and other Canadian stock exchanges have been able to benefit from significant tax-related benefits (Kuyek, 2004).

Canadian mining operations in the DRC are formed through joint ventures. Canadian operations in the DRC are developed through subsidiaries of the main corporation, so often the liability for business practices falls on them instead of the leading company, who still receives the profit (Goitom, 2017). Additionally, the use of subsidiaries to form mining projects abroad allows Canadian corporations to benefit from tax exemption or elimination techniques (Kuyek, 2004).

Labor practices by Canadian companies abroad are subject to the country's "Responsible Business Conduct Abroad: Canada's Strategy for the Future." The government's 5-year strategy (2022 – 2027) outlines its priorities for ensuring that its companies abroad adopt responsible business practices in their supply chains. This includes implementing various conventions from the International Labor Organization, particularly those related to forced and child labor. (Government of Canada, 2021). In addition to country-level strategies and international conventions, Canadian corporations are supposed to adhere to Congolese labor laws. Additionally, Canadian companies will often submit sustainability reports to inform investors on the nature of their operations. While historically, Canadian mining firms have been scrutinized for their violation of labor laws, efforts to commit to better corporate social responsibility

practices have seen the implementation of health and safety standards at Canadian mines (Stimpson, 2020).

### ***Informal Institutions***

Corruption and social conflict are informal institutional factors impacting the outcomes of human rights and economic development in the DRC. The discussion of informal institutions is inherently connected to the formal institutions discussed as corruption and social conflict characterize the legal environment, financing efforts, contracts, and labor laws in the DRC (Transparency International, 2020). Additionally, informal institutions play a large role in the DRC's mining sector; however, given the elusive characteristics of these institutions, documentation is not always publicly accessible, thereby often obscuring the complete narrative.

China's Criminal Law clearly defines bribery and other corrupt by Chinese individuals or entities operating outside of the country as a criminal offence (Global Legal Insights, 2024). Despite China's President Xi Jinping enforcing these laws more vigorously since his election in 2013, Chinese mining firms in the DRC have been accused of bribery, patronage, and avoiding transparency when it comes to mining deals (Li, 2014; Anderson, 2023). Additionally, various interest groups, including human rights organizations, environmental interest groups, and Congolese citizens have expressed disdain with Chinese mining operations. The willingness of Chinese firms to engage in corruption combined with informal practices by Congolese political officials has led to reports of human rights abuses, concerns about labor and environmental standards and has even led to tensions and conflict in some mining areas (Anderson, 2023). Chinese operations have also been noted to take advantage of artisanal-mined cobalt and integrate it into their supply chains (Anderson, 2023). While the DRC has attempted to

implement laws which better regulate artisanal mining (including banning child labor, and improving safety conditions), human rights groups report that these policies have done little to improve the conditions at artisanal mining zones and mining firms still purchase cobalt from these sources to boost their output (Umpula & Bisil, 2023; Reuters, 2023).

Canada is attempting to uplift their status as a global leader in ethics in the critical mineral supply chain. Mining companies operating in the DRC have presented their dedication to uplifting local Congolese communities, limiting the environmental degradation of mining and ensuring that cobalt and other minerals are ethically sourced (i.e., are not obtained with the use of child, forced, or hazardous labor). Nevertheless, corruption persists in the interactions between Canadian mining companies and the DRC. Ivanhoe Mines reportedly gained their mining assets through bribery and backdoor dealings with politically connected individuals of the DRC government (Stoddard, 2022).

Social conflict extends impacts on human rights and economic development in the DRC mining sector. With the country's vast mineral resources and recent increased demand for minerals such as copper and cobalt, stakeholders have engaged in competition for control and exploitation of resources (Carayannis et al., 2018). Disputes over land rights, compensation, and labor practices frequently arise, leading to protests, violence, and sometimes displacement of local populations. Moreover, the pursuit of profit by these multinational corporations can undermine sustainable economic development by prioritizing short-term gains over long-term community well-being and environmental conservation. Both Chinese and Canadian mining firms are privy to social conflict as they engage with the Congolese government, Gécamines and other actors in the mining sector to further their interests.

## **Results**

The impact of formal and informal institutions is further explored in this section through the analysis of three multinational companies operating in the DRC. The selection of two Chinese firms and one Canadian firm is justified given the large presence China has in the Congolese and global mineral market. The single Canadian case studied is still compelling given that the Kamo-a-Kakula mine is the world's largest copper reserve and is expected to supply future copper demand spikes (Holman, 2022). Overall, the cases selected provide useful insight into the role different multinational firms play in the development of human rights and economic development in the DRC. Results will be discussed as they relate to outcomes of human rights and economic development and while an attempt is made to differentiate the two variables, it is reasonable to assume that there is some overlap between the two. It is important to note that the breadth of information available on these companies is often limited, especially when abuses of human rights or corrupt financial practices are involved.

### ***China Nonferrous Metal Mining Group (Deziwa Mine)***

The Deziwa project has impacted human rights outcomes in the DRC through the development of infrastructure and improper financial dealings. In 2022, the Deziwa Project signed the "Public Welfare Initiative for Communities." Over the course of 5 years, the project will invest in agriculture, infrastructure, education, healthcare, energy and more (PR Newswire, 2022). The newness of the infrastructure initiative and overall lack of public details on the entire Deziwa project make it hard to determine the status of progress; however, it is important to note that if properly implemented, these investments can directly impact the lives of Congolese citizens in a positive way. Previous infrastructure deals by China have seen the development of

beneficial services for the DRC, although initial financing commitments have not always been fully realized (PwC, n.d.). The lack of transparency in the Deziwa project's finances also poses a risk to human rights. There have been growing pressures by international human rights groups for the joint venture to publicly disclose their financial records, but this has yet to be realized (Global Witness, 2020). Undisclosed financial statements can lead to the mismanagement and misuse of funds, diverting spending for health, education, and social services (Ganesan, 2010). This lack of transparency undermines accountability and could exacerbate socioeconomic inequalities, ultimately impacting the well-being of local communities.

The Deziwa mine has also impacted human rights through its treatment of workers. A report by RAID, a UK-based human rights organization, interviewed workers at the Deziwa mine. Their findings determined that workers at the site earned a wage below the determined living wage<sup>2</sup>, amounting to \$355 a month (RAID, 2021). Reports of racism have been found through RAID's interviews. Congolese workers at the Deziwa mine reported that verbal and physical violence occurred on site and that preferential treatment was given to foreign (commonly Chinese) employees (RAID, 2021). Additionally, workers at the site reported that there was no Hygiene and Safety Committee on the mine site, despite this being mandated by Congolese law and the company's public commitment to respecting workers' rights (RAID, 2021).

The Deziwa mine has implications for economic development given the lack of transparency of project finances and the debt burden on the DRC. The joint venture forming the mining project amounts to a deal of USD 2 billion, yet the full contractual terms of the deal have

---

<sup>2</sup> The "determined living wage" is the minimum remuneration to afford a decent standard of living. RAID calculates this number using the Minimum Expenditure basket method and has determined it to be \$402.65.

not been released by the DRC government or CNMC, raising concerns about the transparency of revenue flows (Global Witness, 2020). The only published record was the USD 880 million loan for the Deziwa mine construction, but even this was an effort by the Extractive Industries Transparency Initiative (EITI) (Global Witness, 2020). Without full disclosure of the mine's finances, there is a lack of clarity about revenue flows which can hinder the DRC's ability to benefit from the extraction of its natural resources. Furthermore, the reliance on loans, such as the USD 880 million loan for Deziwa mine's construction suggests potential challenges in securing sustainable financing for project development.

The debt burden involved with the Deziwa mine may also impact the DRC's economic development. The loans for the Deziwa mine, which amount to USD 880 million for construction costs, are intended to be repaid by the mine's revenues. Gécamines is being considered for debt relief by the International Monetary Fund and has defaulted on loans in previous partnerships for the Deziwa mine (Global Witness, 2020; IMF, 2023). Lastly, the Deziwa project is considered innovative, given the higher ownership share it gives Gécamines; however, the terms of CNMC's handover are unclear given that CNMC is entitled to 'reasonable profits,' which is not clarified in any public documents about the deal and the deal has an option for CNMC to commence a second phase of the agreement, both which could prolong the handover of the mine (Global Witness, 2020). It is unknown how long it will take Gécamines to pay off the loans. Thus, the DRC's ability to fully reap the benefits of the mine will be hindered until then.

On an individual level, Congolese workers at the Deziwa mine reported low wages and limited opportunities for job growth. In addition to wages at the mine being lower than a living wage, the employment of employees from subcontractors has further driven down wages for

employees on permanent contracts (RAID, 2021). The RAID (2021) report also found that managerial or supervisory positions were only held by Chinese workers.

### ***China Railway and Sinohydro Consortium (Sicomines Mine)***

The Sicomines mine investment in infrastructure represents the largest Chinese investment in the DRC and has significant implications for human rights. The deal for Sicomines laid out investments for the development of long-distance roads, rail construction, hydroelectric dams, and the reconstruction of two major airports (Executive Research Associates, 2009). The impact of these projects is massive considering the DRC's need for infrastructure after years of civil war from the 90s to 2003 (Maiza-Larrarte & Claudio-Quiroga, 2019). However, the initial infrastructure plan faced many challenges resulting in the cancellation or delay of many projects (Maiza-Larrarte & Claudio-Quiroga, 2019). A second infrastructure-loan package was negotiated in 2015 (at a much lower amount), but there remains little data about the development and impact of the 24 projects included in this second contract (Maiza-Larrarte & Claudio-Quiroga, 2019).

The operations of the Sicomines mine has also impacted the rights of workers. While the Sicomines mine does have compulsory union representation for its laborers, union members reported that the union was not effective at achieving their demands and engaging with leadership at the mine (RAID, 2021). Additionally, the Sicomines mine has been noted to hire labor from foreign subcontractors. The RAID report on Congolese mine workers finds that most of the mine's labor force is from subcontractors, who are subject to lower wages, minimal or no benefits and questionable job security (RAID, 2021). Numerous safety hazards at the Sicomines mine have been reported, with workers detailing work they had to do in dangerous conditions

and many workers not receiving any personal protective equipment (RAID, 2021). Lastly, during the COVID-19 pandemic, the mine implemented a lockdown where workers were to either remain at the mine for a period of around 5 months, or lose their jobs (RAID, 2021). Sicomines has not addressed this accusation.

Economic development in the DRC has been impacted by the debt structure under the Sicomines agreement. Estimates of the DRC's debt under this agreement vary, with the International Monetary Fund estimating it at USD 1.7 million and domestic sources suggesting USD 1.2 million (Maiza-Larrarte & Claudio-Quiroga, 2019). Regardless of how much debt has been truly incurred, the substantial amount is supposed to be paid off with revenues generated from the mine (Maiza-Larrarte & Claudio-Quiroga, 2019). Additionally, Sicomines remains tax exempt until the loans are paid off, thus limiting revenue generated from taxes (Maiza-Larrarte & Claudio-Quiroga, 2019). However, the operation of the mine is suspected to add an additional USD 2 billion worth of mineral exports and the completion of infrastructure projects is projected to raise real GDP growth by 0.7% (Maiza-Larrarte & Claudio-Quiroga, 2019).

Suspensions of corruption exist for the Sicomines deal. The transfer of funds for infrastructure development in the DRC is large, amounting to about USD 150 million per year, but none of these funds pass through the Congolese state treasury (The Carter Center, 2017). These funds are not taxed and are distributed by the joint venture, and ultimately forgo impartial oversight (The Carter Center, 2017). In 2014, a USD 1.163 billion loan was distributed for infrastructure, but the entire amount was not spent. USD 685 million remained unspent but no documentation has been offered to explain where this money went (The Carter Center, 2017).

Economic development related to the labor force has also been impacted by the mine's operations. Workers reported receiving wages of about \$500 per month, which is higher than the



living wage and higher than wages of other mining firms in the nearby area (RAID, 2021).

Alternatively, workers cited that expatriates working at Sicominex received bonuses that native Congolese workers were not eligible for and there are limited opportunities for job growth (RAID, 2021).

### ***Ivanhoe Mines (Kamoa-Kakula Mine)***

Ivanhoe Mine's labels the corporation as "a modern leader in sustainability, environmental stewardship, community parentship and responsible mine production" (Ivanhoe Mines, 2022). In 2022, the company published their "Sustainability Report 2022: Mining With A Greater Purpose" which outlines the company's strategy to support the communities they operate in, reduce greenhouse gas emissions, and commit themselves to ethical operations at their mining sites (Junior Mining Network, 2022).

Ivanhoe's investment in livelihood projects and community outreach has made an impact on human rights. Mining Review Africa reports that the mine's Sustainable Livelihoods Program has made an impact on agriculture skills in local communities (Guest Contributor, 2021). There is limited data assessing the impact of this project, but similar livelihood and community projects at Ivanhoe's Kipushi Zinc mine have reported a predominantly positive response to the projects by the impacted community (International Crisis Group, 2020).

Ivanhoe's expansion of their mine in 2016 with the Kakula discovery also affected human rights for nearby communities. In 2017 the company determined that 45 households were in proximity of the new mining development and thus needed to be resettled (Amnesty International, 2023). While resettled individuals reported that Ivanhoe made a good effort to provide them with accurate information about their resettlement, they found that the new housing

was of a lower standard than what was originally agreed to (Amnesty International, 2023).

Researchers who explored the resettlement area found that the houses were not equipped with running water, electricity, or access to plumbing (Amnesty International, 2023).

Moreover, the construction of a primary school, healthcare facility, and other recreational amenities was not completed at the time of resettlement and has taken years to finish; some are still under construction (Amnesty International, 2023).

Ivanhoe Mines has also faced allegations of confining workers to the mine site during the COVID-19 pandemic. The Business and Human Rights Center reported that hundreds of workers in Congo were forced to stay at the mine site when quarantine measures went in place (York, 2020). Ivanhoe has denied these allegations and continues to reaffirm that workers were permitted to leave the site if they chose without the risk of losing their job (York, 2020).

Economic development in the DRC has seen impacts given that the Kamoa-Kakula mine is set to become one of the world's largest copper mines (Mining Technology, 2021). Thus, it is expected that substantial revenue for the DRC will be generated with the continued operation of this mine. Per the Ivanhoe website, the company reports that the Kamoa-Kakula mine contributes to 4% of the DRC's GDP and that \$300 million in government taxes and royalties have been paid since April 2021 (Ivanhoe Mines, 2021). Additionally, the company makes quarterly financial reports documenting spending and money generated from the mine available to the public via their website.

In 2023, the company opened the Kamoa Center of Excellence, a higher education facility committed to training Congolese students to enter the country's mining sector (Ivanhoe Mines, 2023). While there is little data evaluating the implementation of this program, offering

educational services can increase the skill and wages of workers in the future. There are no reports or documentation on whether workers at Ivanhoe are properly remunerated.

## **Discussion and Conclusion**

Like all studies, this research is not without its limitations. For one, the use of a case study method to evaluate the research question makes it difficult to generalize findings onto other firms mining in the DRC or mining done in other countries. While the choice of two Chinese firms and one Canadian firm was justified given China's large presence in the country, there is something to be said about the impact this could have on conclusions. It should also be noted that currently, Ivanhoe Mines, the Canadian case study only mines copper, which could marginally impact some of their operations as compared to a copper-cobalt producing mine. Additionally, the body of research exploring the operation of Chinese firms in the DRC and Africa is extensive, but research on Canada's impact in the region remains much more limited. Similarly, the impact of the chosen mining firms is difficult to accurately determine given that there is limited data collected on the efficacy of their investments, programs, and operations as they relate to human rights and economic development. The use of certain formal and informal factors excludes other factors that could impact the results of this analysis. Lastly, it should be noted that multinational actors in the DRC's mining sector are not the only actors. The sector comprises of multinationals outside of China and Canada, Congolese-based agencies and individuals, and various other stakeholders which can impact human rights and economic development.

Multinational mining firms are dominant players in the DRC's mineral market, and thus have expansive impacts on the country. While it is thought that formal institutions can contribute

to improvements in human rights and economic development in the DRC, the role of the informal sector remains considerable and thus continues to shape the interactions of the mining sector. While Chinese firms make extensive investments in infrastructure that are crucial to the DRC, the implementation of these projects and the treatment of workers indicates poor human rights protections. Additionally, while Chinese mines generate revenue for the DRC, the lack of transparency in their financing and the debt burden the agreements place on the DRC complicate sustainable economic development. Given China's dominant role in the global supply chain for critical minerals, more accountability needs to take place on firms that do not properly engage in labor and community protections and financial best practices. Canada's operation in the DRC does report better human rights standards but does not include as expansive of infrastructure investments and improper dealings with the local community have occurred. Lastly, greater transparency exists in Ivanhoe's financial dealings and government revenue and GDP growth are reported with the development of the Kamoakakula mine. Canadian policy promotes the country as a global leader in sustainable and ethical mining practices, and there is some evidence suggesting that their foreign mining assets may have a positive impact on the DRC. However, ongoing implementation of ethical mining practices and accountability measures is essential.

The status of mining in the DRC invites many opportunities for future research. First, there is a large gap to fill on the matter of artisanal mining. Future research should focus on examining how artisanal mined minerals enter industrial supply chains, identifying the factors influencing the informal mineral market, and understanding the nature of interactions between industrial and artisanal actors. Additionally, research should continue to explore the paradox of the DRC's limited benefit from its mineral wealth and propose solutions to address this issue. Future research is also needed to assess the impact of specific mining firms in the DRC, as

current data is limited to investigations done by human rights and journalism groups. The impact of mining on human rights and economic development can be much more nuanced than presented in this analysis, so it should be explored even further in the future. Finally, mining impacts more than just human rights and economic development outcomes, giving way for a plethora of future research considerations.

The future of supplying our energy needs is reliant on the minerals coming from the DRC. With surmounting pressures to transition to cleaner energy forms such as EVs, countries are scrambling to achieve their mineral needs and gain a role in the global supply chain for cobalt, copper, and other critical minerals. While the DRC will undoubtedly remain a pivotal player in meeting global mineral demands, it is imperative that the sustainable and ethical development of mineral resources take precedence to foster the country's growth and prosperity. Currently the vast wealth generated by technology firms benefiting from Congolese minerals presents a paradox to the level of poverty and lack of development occurring in the Congo. Mining and technology firms must prioritize the establishment of responsible supply chains and be held accountable for their practices. By doing so, they can contribute to the long-term stability, environmental conservation, and socio-economic development of the DRC, ensuring a more equitable and sustainable future for all stakeholders involved.

## Bibliography

- Abadie, D. (2011). Canada and the geopolitics of mining interests: A case study of the Democratic Republic of Congo. *Review of African Political Economy*, 38(128), 289–302.
- Agusdinata, D. B., & Liu, W. (2023). Global sustainability of electric vehicles minerals: A critical review of news media. *The Extractive Industries and Society*, 13, 101231. <https://doi.org/10.1016/j.exis.2023.101231>
- Anderson, P. (2023). Cobalt and Corruption: The Influence of Multinational Firms and Foreign States on the Democratic Republic of the Congo. *Journal for Global Business and Community*, 14(1). <https://doi.org/10.56020/001c.72664>
- Andreonia, A., & Avenyob, E. (n.d.). *Critical Minerals and Routes to Diversification in Africa: Opportunities for diversification into Mobile Phone Technologies—The Case of Democratic Republic of Congo*.
- Artisanal and Small-Scale Mining | Pact. (n.d.). Retrieved February 16, 2024, from <https://www.pactworld.org/our-expertise/mining>
- Australia: Cobalt production 2021. (n.d.). Statista. Retrieved February 15, 2024, from <https://www.statista.com/statistics/1129805/australia-cobalt-production/>
- Baskaran, G. (2023). *A Window of Opportunity to Build Critical Mineral Security in Africa*. <https://www.csis.org/analysis/window-opportunity-build-critical-mineral-security-africa>
- Bazilian, C. H. and M. (n.d.). *Markets for Critical Minerals Are Too Prone to Failure*. Barrons. Retrieved January 29, 2024, from <https://www.barrons.com/articles/markets-critical-minerals-lithium-cobalt-copper-51671227168>
- Bribery & Corruption Laws and Regulations | China | GLI (United Kingdom). (n.d.). [Text]. GLI - Global Legal Insights - International Legal Business Solutions; Global Legal Group. Retrieved March 8, 2024, from <https://www.globallegalinsights.com/practice-areas/bribery-and-corruption-laws-and-regulations/china>
- Burke, H. S., & Doyle, C. (2023). *U.S. Governance on Critical Minerals*. 4.
- Canada, N. R. (2017a, January 31). *Canadian Mining Assets*. Natural Resources Canada. <https://natural-resources.canada.ca/maps-tools-and-publications/publications/minerals-mining-publications/canadian-mining-assets/19323>
- Canada, N. R. (2017b, January 31). *Canadian Mining Assets*. Natural Resources Canada. <https://natural-resources.canada.ca/maps-tools-and-publications/publications/minerals-mining-publications/canadian-mining-assets/19323>
- Canada, N. R. (2023, March 9). *Cobalt facts*. Natural Resources Canada. <https://natural-resources.canada.ca/our-natural-resources/minerals-mining/mining-data-statistics-and-analysis/minerals-metals-facts/cobalt-facts/24981>
- Canadian Corruption of Foreign Public Officials Act (“CFPOA”)—Compliance Reference—GAN Integrity. (n.d.). Retrieved February 27, 2024, from <https://www.ganintegrity.com/reference/cfpoa/>
- Carmen. (2022, June 3). The world’s ten largest cobalt mines. *Mining Technology*. <https://www.mining-technology.com/marketdata/ten-largest-cobalts-mines/>

- Cartographie de l'exploitation minière artisanale du cuivre et du cobalt dans les provinces du Haut-Katanga et du Lualaba en République Démocratique du Congo.* (n.d.).
- Castillo, E., del Real, I., & Roa, C. (2023). *Critical minerals versus major minerals: A comparative study of exploration budgets.* <https://doi.org/10.1007/s13563-023-00388-w>
- CGEP, C. |. (2023, June 12). *Critical Mineral Supply Constraints and Their Impact on Energy System Models.* Center on Global Energy Policy at Columbia University SIPA | CGEP. <https://www.energypolicy.columbia.edu/publications/critical-mineral-supply-constraints-and-their-impact-on-energy-system-models/>
- China Moly ups stake in giant Tenke copper mine to 80%. (2019, January 18). *MINING.COM.* <https://www.mining.com/china-moly-ups-stake-giant-tenke-copper-mine-80/>
- China's Massive Belt and Road Initiative.* (n.d.). Council on Foreign Relations. Retrieved March 5, 2024, from <https://www.cfr.org/background/chinas-massive-belt-and-road-initiative>
- China's Role in Critical Mineral Supply Chains | German Marshall Fund of the United States.* (n.d.). Retrieved February 1, 2024, from <https://www.gmfus.org/news/chinas-role-critical-mineral-supply-chains>
- Chinese and other cobalt mines boosting output despite price slide. (2023, December 6). *Reuters.* <https://www.reuters.com/markets/commodities/chinese-other-cobalt-mines-boosting-output-despite-price-slide-2023-12-06/>
- Cobalt global demand forecast by end-use 2030.* (n.d.). Statista. Retrieved February 20, 2024, from <https://www.statista.com/statistics/1425427/global-cobalt-demand-forecast-by-end-use/>
- Cobalt in Democratic Republic of the Congo.* (n.d.). The Observatory of Economic Complexity. Retrieved February 21, 2024, from <https://oec.world/en>
- Cobalt Market Report 2022—Cobalt Institute.* (n.d.). Retrieved February 20, 2024, from <https://www.cobaltinstitute.org/resource/cobalt-market-report-2022/>
- Cobalt refining power gives China an advantage in the race for EV battery dominance.* (n.d.). Resource Trade. Retrieved February 25, 2024, from <https://resourcetrade.earth/publications/critical-metals-ev-batteries>
- Congo cobalt mining dispute ends with deal as China's CMOC agrees to pay \$2 billion—The Oregon Group—Investment Insights.* (2023, July 21). <https://theoregongroup.com/commodities/cobalt/congo-cobalt-mining-dispute-ends-with-deal-as-chinas-cmoc-agrees-to-pay-2-billion/>
- Congo, Democratic Republic—9.3-Labor Policies & Practices | Privacy Shield.* (n.d.). Retrieved February 25, 2024, from <https://www.privacyshield.gov/ps/article?id=Congo-Democratic-Republic-Labor-Policies-Practices>
- Congo opens Chinese-owned Deziwa copper and cobalt mine | Reuters.* (n.d.). Retrieved February 27, 2024, from <https://www.reuters.com/article/us-congo-mining-idUSKBN1ZE14G/>
- Contributor, G. (2021, February 26). BUILDING SUSTAINABLE COMMUNITIES: Ivanhoe Mines. *Miningreview.Com.* <https://www.miningreview.com/base-metals/building-sustainable-communities-ivanhoe-mines/>

- Copper Mining and Processing: Life Cycle of a Mine.* (2020, July 13). Superfund.  
<https://superfund.arizona.edu/resources/modules/copper-mining-and-processing/life-cycle-mine>
- Copper Reserves: Top 5 Countries (Updated 2024).* (n.d.). Retrieved April 17, 2024, from  
<https://investingnews.com/daily/resource-investing/base-metals-investing/copper-investing/top-copper-reserves-country/>
- Corporate Governance in Canada.* (2021, May 5). ECGI.  
<https://www.ecgi.global/content/corporate-governance-canada>
- Cox, D., Barton, P., & Singer, D. (n.d.). *Introduction to Mineral Deposit Models.* Retrieved February 7, 2024, from <https://pubs.usgs.gov/bul/b1693/html/bull1nzi.htm>
- Critical Mineral Basics.* (2014, October 11). American Geosciences Institute.  
<https://www.americangeosciences.org/critical-issues/critical-mineral-basics>
- Critical minerals: How the mining sector can accelerate the energy transition.* (n.d.). ERM. Retrieved February 1, 2024, from <https://www.erm.com/insights/critical-minerals-how-the-mining-sector-can-accelerate-the-energy-transition/>
- Delve | Delve Country Profile: Democratic Republic of Congo.* (n.d.). Delve. Retrieved April 4, 2024, from <https://www.delvedatabase.org/resources/delve-country-profile-democratic-republic-of-congo>
- Democratic Republic of the Congo (COD) Exports, Imports, and Trade Partners.* (n.d.). The Observatory of Economic Complexity. Retrieved April 17, 2024, from  
<https://oec.world/en/profile/country/cod>
- Discovery to production averages 15.7 years for 127 mines.* (n.d.). Retrieved February 5, 2024, from <https://www.spglobal.com/marketintelligence/en/news-insights/research/discovery-to-production-averages-15-7-years-for-127-mines>
- Dou, S., Xu, D., Zhu, Y., & Keenan, R. (2023). Critical mineral sustainable supply: Challenges and governance. *Futures*, 146, 103101.  
<https://doi.org/10.1016/j.futures.2023.103101>
- DRC: Ivanhoe Mines denies allegation workers confined to mine site.* (n.d.). Business & Human Rights Resource Centre. Retrieved April 18, 2024, from  
<https://www.business-humanrights.org/en/latest-news/drc-ivanhoe-mines-denies-allegation-workers-confined-at-site-through-covid-19-restrictions/>
- EITI Requirements.* (2023, June 12). EITI. <https://eiti.org/eiti-requirements>
- emagine. (2023, August 17). *Cobalt, Congo and the Mining Conundrum.* OPIS, A Dow Jones Company. <https://www.opisnet.com/blog/cobalt-congo-and-the-mining-conundrum/>
- Emmanuel Umpula, E. B. (n.d.). *Formalising artisanal cobalt mining in the DRC: Much work remains.* Retrieved March 8, 2024, from <https://www.ied.org/formalising-artisanal-cobalt-mining-drc-much-work-remains>
- Executive summary – The Role of Critical Minerals in Clean Energy Transitions – Analysis.* (n.d.). IEA. Retrieved March 5, 2024, from <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary>
- Fortier, S. M., Thomas, C. L., McCullough, E. A., & Tolcin, A. C. (2018). Global Trends in Mineral Commodities for Advanced Technologies. *Natural Resources Research*, 27(2), 191–200. <https://doi.org/10.1007/s11053-017-9340-9>
- Ganesan, A. (2010). Transparency and Accountability in Angola. *Human Rights Watch*.  
<https://www.hrw.org/report/2010/04/13/transparency-and-accountability-angola>



- Geenen, K. (2020). Patronage, social proximity, and instrumentality in the mining industry in the Democratic Republic of Congo: The union elections explored. *Dialectical Anthropology*, 44(2), 173–185. <https://doi.org/10.1007/s10624-019-09575-0>
- Global cobalt reserves by country 2022. (n.d.). Statista. Retrieved February 20, 2024, from <https://www.statista.com/statistics/264930/global-cobalt-reserves/>
- GlobalData. (2023, November 17). Global copper supply in 2023 will be supported by increased output from the DRC, Peru, and Chile. *Mining Technology*. <https://www.mining-technology.com/analyst-comment/global-copper-supply-2023/>
- Goitom, H. (2017a, November 15). *Canadian Courts Are Taking a Step Toward Corporate Liability of Multinationals for Wrongdoings Abroad | In Custodia Legis* [Webpage]. The Library of Congress. <https://blogs.loc.gov/law/2017/11/canadian-courts-are-taking-a-step-toward-corporate-liability-of-multinationals-for-wrongdoings-abroad>
- Goitom, H. (2017b, November 15). *Canadian Courts Are Taking a Step Toward Corporate Liability of Multinationals for Wrongdoings Abroad | In Custodia Legis* [Webpage]. The Library of Congress. <https://blogs.loc.gov/law/2017/11/canadian-courts-are-taking-a-step-toward-corporate-liability-of-multinationals-for-wrongdoings-abroad>
- Government of Canada, I. (2023, December 11). *Corporate records and other corporate obligations*. Innovation, Science and Economic Development Canada. <https://ised-isde.canada.ca/site/corporations-canada/en/business-corporations/corporate-records-and-other-corporate-obligations>
- Guide to mining regulatory and legal regimes in Canada | Insights | Torys LLP*. (n.d.). Retrieved February 28, 2024, from <https://www.torys.com/our-latest-thinking/publications/2023/12/guide-to-mining-regulatory-and-legal-regimes-in-canada>
- Gulley, A. L. (2022a). *One hundred years of cobalt production in the Democratic Republic of the Congo*.
- Gulley, A. L. (2022b). One hundred years of cobalt production in the Democratic Republic of the Congo. *Resources Policy*, 79, 103007. <https://doi.org/10.1016/j.resourpol.2022.103007>
- Henisz, W. J., & Zelner, B. A. (2010, April 1). The Hidden Risks in Emerging Markets. *Harvard Business Review*. <https://hbr.org/2010/04/the-hidden-risks-in-emerging-markets>
- Hodge, R. A. (2014). Mining company performance and community conflict: Moving beyond a seeming paradox. *Journal of Cleaner Production*, 84, 27–33. <https://doi.org/10.1016/j.jclepro.2014.09.007>
- Holman, J. (2022, May 11). *Massive copper supply required for electrification of global economy: Friedland*. <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/051122-massive-copper-supply-required-for-electrification-of-global-economy-friedland>
- Huang, T., & Véron, N. (2023, February 2). *China's state vs. private company tracker: Which sector dominates? | PIIE*. <https://www.piie.com/research/piie-charts/2023/chinas-state-vs-private-company-tracker-which-sector-dominates>
- Humphreys, D. (2014). *Critical Metals Handbook*.
- ICS. (2021a, August 27). Chinese Mining in the DRC: From Sicomines to Global Cobalt Monopoly. *ICS Research Blog*. <https://icsin.org/blogs/2021/08/27/chinese-mining-in-the-drc-from-sicomines-to-global-cobalt-monopoly/>

- ICS. (2021b, August 27). Chinese Mining in the DRC: From Sicominex to Global Cobalt Monopoly. *ICS Research Blog*. <https://icsin.org/blogs/2021/08/27/chinese-mining-in-the-drc-from-sicomines-to-global-cobalt-monopoly/>
- Impact of New Mining Technologies on Local Procurement in the DRC*. (n.d.).
- Implications – Critical Minerals Market Review 2023 – Analysis*. (n.d.). IEA. Retrieved February 1, 2024, from <https://www.iea.org/reports/critical-minerals-market-review-2023/implications>
- Insights, I. S. S. (2022, October 6). *The Cobalt Conundrum: Net Zero Necessity vs Supply Chain Concerns*. ISS Insights. <https://insights.issgovernance.com/posts/the-cobalt-conundrum-net-zero-necessity-vs-supply-chain-concerns/>
- Institutionalist Economics | Exploring Economics*. (n.d.). Retrieved March 5, 2024, from <https://www.exploring-economics.org/en/orientation/institutionalist-economics/>
- Ivanhoe Mines*. (n.d.-a). Retrieved February 26, 2024, from <https://www.ivanhoemines.com/investors/investor-faqs/faq/on-what-stock-exchanges-is-ivanhoe-mines-listed-what-are-the-ticker-symbols/>
- Ivanhoe Mines*. (n.d.-b). Retrieved April 16, 2024, from <https://www.ivanhoemines.com/sustainability/prosperity/>
- Ivanhoe Mines*. (n.d.-c). Retrieved April 18, 2024, from <https://www.ivanhoemines.com/news-stories/story/the-kamoa-centre-of-excellence-officially-inaugurated-by-drc-president-felix-tshisekedi-amidst-an-enthusiastic-crowd-of-more-than-5000-workers/>
- Jahmani, Y., & Dowling, W. A. (2011). The Impact Of Sarbanes-Oxley Act. *Journal of Business & Economics Research (JBER)*, 6(10). <https://doi.org/10.19030/jber.v6i10.2479>
- Jansson, J. (n.d.). *The Sicominex Agreement: Change and Continuity in the Democratic Republic of Congo's International Relations*. 97.
- Jansson, J. (2013). The Sicominex agreement revisited: Prudent Chinese banks and risk-taking Chinese companies. *Review of African Political Economy*, 40, 152. <https://doi.org/10.1080/03056244.2013.762167>
- Kafourous, M., Chandrashekar, S. P., Aliyev, M., & Au, A. K. M. (2022). How do formal and informal institutions influence firm profitability in emerging countries? *Journal of International Management*, 28(1), 100890. <https://doi.org/10.1016/j.intman.2021.100890>
- Kalantzakos, S. (2019). *The Geopolitics of Critical Minerals*. Istituto Affari Internazionali (IAI). <https://www.jstor.org/stable/resrep23660>
- Kamoa Kakula Integrated Development Plan 2023*. (2023).
- Kaplinsky, R., McCormick, D., & Morris, M. (n.d.). *China and Sub Saharan Africa: Impacts and Challenges of a Growing Relationship*.
- Kaufmann, W., Hooghiemstra, R., & Feeney, M. K. (2018). Formal institutions, informal institutions, and red tape: A comparative study. *Public Administration*, 96(2), 386–403. <https://doi.org/10.1111/padm.12397>
- kgi-admin. (2023, March 16). Cobalt production in Australia and major projects. *Mining Technology*. <https://www.mining-technology.com/data-insights/cobalt-in-australia/>
- Livingstone, E. (2024, January 26). *Uncertainties Remain With Renegotiated Chinese Mining Deal in DRC*. Voice of America. <https://www.voanews.com/a/uncertainties-remain-with-renegotiated-chinese-mining-deal-in-drc-/7458908.html>

- Masilela, P. (2024, January 8). What are the challenges in Africa's mining industry? *Miningreview.Com*. <https://www.miningreview.com/gold/what-are-the-challenges-in-africas-mining-industry/>
- McKinnon, J. (2016, November 15). Lundin Mining to Sell Stake in African Mine for \$1.14 Billion. *Wall Street Journal*. <http://www.wsj.com/articles/lundin-mining-to-sell-stake-in-african-mine-for-1-14-billion-1479215364>
- McNulty, B. A., & Jowitt, S. M. (2021). Barriers to and uncertainties in understanding and quantifying global critical mineral and element supply. *iScience*, 24(7), 102809. <https://doi.org/10.1016/j.isci.2021.102809>
- Mega deal between Gécamines and Chinese state-owned company CNMC for one of DRC's flagship copper mines could be leaving the country short-changed*. (n.d.). Global Witness. Retrieved February 18, 2024, from <https://en.press-releases/mega-deal-between-g%C3%A9camines-and-chinese-state-owned-company-cnmc-for-one-of-drcs-flagship-copper-mines-could-be-leaving-the-country-short-changed/>
- Mineral Concessions: Avoiding Conflict in DR Congo's Mining Heartland*. (n.d.-a).
- Mineral Concessions: Avoiding Conflict in DR Congo's Mining Heartland*. (n.d.-b).
- Mineral requirements for clean energy transitions – The Role of Critical Minerals in Clean Energy Transitions – Analysis*. (n.d.). IEA. Retrieved February 20, 2024, from <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/mineral-requirements-for-clean-energy-transitions>
- Mineral Resources and Mineral Reserves—Boliden*. (n.d.-a). Retrieved February 21, 2024, from <https://www.boliden.com/operations/exploration/mineral-reserves-and-mineral-resources/>
- Mineral Resources and Mineral Reserves—Boliden*. (n.d.-b). Retrieved February 21, 2024, from <https://www.boliden.com/operations/exploration/mineral-reserves-and-mineral-resources/>
- Mining | Invest in Canada*. (n.d.). Retrieved February 26, 2024, from <https://www.investcanada.ca/industries/mining>
- Mining Conditions and Trading Networks in Artisanal Copper-Cobalt Supply Chains in the Democratic Republic of the Congo*. (n.d.).
- Mining Weekly—Ivanhoe pursuing sustainability, socioeconomic initiatives as it strives to transform industry*. (n.d.). Engineering News. Retrieved February 27, 2024, from <https://www.miningweekly.com/print-version/ivanhoe-pursuing-sustainability-socioeconomic-initiatives-as-it-strives-to-transform-industry-2023-06-20>
- Mission critical: Securing supply of critical minerals. (2023, June 14). *RBC Wealth Management*. <https://www.rbcwealthmanagement.com/en-us/insights/mission-critical-securing-supply-of-critical-minerals>
- Moran, C. J., Lodhia, S., Kunz, N. C., & Huisingsh, D. (2014). Sustainability in mining, minerals and energy: New processes, pathways and human interactions for a cautiously optimistic future. *Journal of Cleaner Production*, 84, 1–15. <https://doi.org/10.1016/j.jclepro.2014.09.016>
- More than 300 new mines required to meet battery demand by 2035*. (2022, September 6). Benchmark Source. <https://source.benchmarkminerals.com/article/more-than-300-new-mines-required-to-meet-battery-demand-by-2035>
- Nations, U. (n.d.). *Strengthening the Rule of Law and Protection of Civilians in the Democratic Republic of the Congo*. United Nations; United Nations. Retrieved April

- 18, 2024, from <https://www.un.org/en/chronicle/article/strengthening-rule-law-and-protection-civilians-democratic-republic-congo>
- Nedopil, C. (2023). *China Belt and Road Initiative (BRI) Investment Report 2023 H1*. <https://doi.org/10.13140/RG.2.2.13892.19841>
- News, B. (2023, July 18). *China's CMOC Strikes \$2 Billion Deal to End Congo Mining Dispute—BNN Bloomberg*. BNN. <https://www.bnnbloomberg.ca/china-s-cmoc-strikes-2-billion-deal-to-end-congo-mining-dispute-1.1947247>
- Overview. (n.d.). [Text/HTML]. World Bank. Retrieved February 21, 2024, from <https://www.worldbank.org/en/country/drc/overview>
- Paid Program: Canada's Critical Mineral Advantage. (2024, March 5). *Invest Canada*. [https://partners.wsj.com/invest-canada/opportunity-canada/an-essential-link/Parallel Governance—Irénées](https://partners.wsj.com/invest-canada/opportunity-canada/an-essential-link/Parallel%20Governance%E2%80%94Ir%C3%A9n%C3%A9es). (n.d.). Retrieved March 7, 2024, from [https://www.irenees.net/bdf\\_fiche-notions-221\\_en.html](https://www.irenees.net/bdf_fiche-notions-221_en.html)
- Policy developments – Global EV Outlook 2023 – Analysis*. (n.d.). IEA. Retrieved March 5, 2024, from <https://www.iea.org/reports/global-ev-outlook-2023/policy-developments>
- President Xi's Anti-Corruption Campaign*. (n.d.). Brookings. Retrieved April 18, 2024, from <https://www.brookings.edu/articles/president-xis-anti-corruption-campaign/>
- Press, B. G. S. (2021, June 9). *Lithium: A critical raw material for our journey to net zero*. British Geological Survey. <https://www.bgs.ac.uk/news/lithium-a-critical-raw-material-for-our-journey-to-net-zero/>
- Price, M. (n.d.). *Dual-Listing: Definition, Explanation, and Benefits*. The Motley Fool. Retrieved February 26, 2024, from <https://www.fool.com/terms/d/dual-listing/>
- PricewaterhouseCoopers. (n.d.). *ESG Reporting Insights: Mining*. PwC. Retrieved March 7, 2024, from <https://www.pwc.com/ca/en/today-s-issues/environmental-social-and-governance/esg-reporting-insights/mining.html>
- Readhead, A. (n.d.). *Tax Incentives in Mining: Minimising Risks to Revenue*. *Regime Cash Machine*. (n.d.). Global Witness. Retrieved March 7, 2024, from <https://en/campaigns/democratic-republic-congo/regime-cash-machine/>
- Resource realism: The geopolitics of critical mineral supply chains*. (2023, November 29). Goldman Sachs. <https://www.goldmansachs.com/intelligence/pages/resource-realism-the-geopolitics-of-critical-mineral-supply-chains.html>
- Resource realism: The geopolitics of critical mineral supply chains*. (2024, January 8). Goldman Sachs. <https://www.goldmansachs.com/intelligence/pages/resource-realism-the-geopolitics-of-critical-mineral-supply-chains.html>
- Ross, A. (2018, March 15). *How Congo faced down some of the world's biggest mining firms*. Reuters. <https://www.reuters.com/article/idUSKCN1GR2HD/>
- Runde, D. F., & Hardman, A. (2023). *Elevating the Role of Critical Minerals for Development and Security*. <https://www.csis.org/analysis/elevating-role-critical-minerals-development-and-security>
- Runge, I. C. (1998). *Mining Economics and Strategy*. SME.
- Shiquan, D., & Deyi, X. (2023). *The security of critical mineral supply chains*. *Mineral Economics*, 36(3), 401–412. <https://doi.org/10.1007/s13563-022-00340-4>
- Soguel, D. (2023, February 9). *Rethinking artisanal cobalt mining in the DRC*. *SWI Swissinfo.Ch*. <https://www.swissinfo.ch/eng/business/rethinking-artisanal-cobalt-mining-in-the-drc/48260638>



- Taylor, C. D., Causey, J. D., Denning, P., Hammarstrom, J. M., Hayes, T. S., Horton, J. D., Kirschbaum, M. J., Parks, H. L., Wilson, A. B., Wintzer, N. E., & Zientek, M. L. (2013). Descriptive models, grade-tonnage relations, and databases for the assessment of sediment-hosted copper deposits: With emphasis on deposits in the Central Africa Copperbelt, Democratic Republic of the Congo and Zambia: Chapter J in *Global mineral resource assessment*. In *Scientific Investigations Report* (2010-5090-J; pp. i–154). U.S. Geological Survey. <https://doi.org/10.3133/sir20105090J>
- Technical note on critical minerals: Supply chains, trade flows and value addition*. (n.d.). Tenke Fungurume Copper-Cobalt Mine—NS Energy. (n.d.). Retrieved February 18, 2024, from <https://www.nsenergybusiness.com/projects/tenke-fungurume-copper-cobalt-mine/>
- The Cobalt Expansion Drive Is A Copper Story*. (n.d.). Retrieved February 20, 2024, from <https://www.spglobal.com/marketintelligence/en/news-insights/blog/the-cobalt-expansion-drive-is-a-copper-story>
- Umpula, E., Buxton, A., & Schwartz, B. (n.d.). *Islands of responsibility?* U.S. Geological Survey Releases 2022 List of Critical Minerals | U.S. Geological Survey. (n.d.). Retrieved February 12, 2024, from <https://www.usgs.gov/news/national-news-release/us-geological-survey-releases-2022-list-critical-minerals>
- Valerio, P. (2024, February 5). China's DRC-Minerals Investment Raises Red Flags. *EPS News*. <https://epsnews.com/2024/02/05/chinas-drc-minerals-investment-raises-red-flags/>
- Villalobos, F., Brosmer, J. L., Silberglitt, R., Lee, J. M., & Curtright, A. E. (2022). *Time for Resilient Critical Material Supply Chain Policies*. RAND Corporation. [https://www.rand.org/pubs/research\\_reports/RRA2102-1.html](https://www.rand.org/pubs/research_reports/RRA2102-1.html)
- WANG, C. N. (2024, February 5). *China Belt and Road Initiative (BRI) Investment Report 2023 – Green Finance & Development Center*. <https://greenfdc.org/china-belt-and-road-initiative-bri-investment-report-2023/>
- Wang, D., & Zhao, P. (2019). Mismatching Structures: A New Explanation for the “Unsatisfactory” Labor Conditions in Chinese Mining Companies in the Democratic Republic of Congo. *Chinese Journal of International Review*, 01(01), 1850005. <https://doi.org/10.1142/S2630531318500051>
- What is corruption?* (n.d.). Transparency.Org. Retrieved March 7, 2024, from <https://www.transparency.org/en/what-is-corruption>
- What to Make of Congo's Revenue Dispute With Mining Giant China Molybdenum* | RANE. (n.d.). Stratfor. Retrieved February 18, 2024, from <https://worldview.stratfor.com/article/article/what-make-congos-revenue-dispute-mining-giant-china-molybdenum>
- Which countries produce the most copper?* (2022, December 12). World Economic Forum. <https://www.weforum.org/agenda/2022/12/which-countries-produce-the-most-copper/>
- Why Cobalt Mining in the DRC Needs Urgent Attention*. (n.d.). Council on Foreign Relations. Retrieved February 21, 2024, from <https://www.cfr.org/blog/why-cobalt-mining-drc-needs-urgent-attention>
- Williams, J. T., Vangu, A. M., Mabilia, H. B., Mangungulu, H. B., & Tissingh, E. K. (2021). Toxicity in the supply chain: Cobalt, orthopaedics, and the Democratic Republic of

the Congo. *The Lancet Planetary Health*, 5(6), e327–e328.

[https://doi.org/10.1016/S2542-5196\(21\)00057-7](https://doi.org/10.1016/S2542-5196(21)00057-7)

*Zijin increases Ivanhoe stake.* (2019, October 9). <https://www.mining-journal.com/base-metals/news/1373148/zijin-increases-ivanhoe-stake>

*Zijin Mining acquires 49.5% of Ivanhoe's Kamoanga Copper Project Stake for a total aggregate consideration of US\$412 million.* (2015, May).

<https://www.fasken.com/it/solution/clientwork/2015/05/zijin-mining-acquires-49.5-of-ivanhoe-kamoanga-copper-project-stake-for-a-total-aggregate-consideration>