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Balyaminu, J.A.

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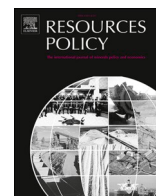
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The state of cobalt mining Laws: Implications for the future of Democratic Republic of Congo (DRC) and Zambia cobalt mining prospects

Jeleel Abiola Balyaminu 

Leiden University, African Studies Centre, Leiden, the Netherlands

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ABSTRACT

Globally, there is a significant increase in the demand for cobalt, which is marked by a notable sophistication in market dynamics. Cobalt, a critical natural resource, is predominantly sourced from the Democratic Republic of the Congo (DRC) and Zambia. However, in these countries, vulnerabilities and tensions occasionally arise among various stakeholders involved in cobalt mining, including employees, government authorities, law enforcement, local communities, and civil society. These tensions often stem from differing interpretations of mining legislation and how these laws influence mining operations and safeguard the interests of each stakeholder. This situation raises pertinent questions regarding the nature of the relationship between existing mining laws and cobalt mining regulations in the DRC and Zambia, as well as the extent of stakeholder engagement in the decision-making process pertaining to cobalt mining legislation. Employing a cross-sectional probing method, this paper examines the current state of mining legislation and its implications for the future economic prospects of this natural resource, alongside the protection of stakeholder interests. Semi-structured interviews were conducted with community representatives, mine employees, and artisanal mine operators. Additionally, focus group discussions were held to gather expert opinions at both national and international levels, with the aim of obtaining insight into potential policy solutions. The findings reveal divergent perspectives among stakeholders on the legal frameworks that govern the cobalt mining sector. The thematic analysis conducted indicates a tendency towards favouritism in the implementation of legal instruments and highlights the exclusion of various stakeholders from the policy formulation process ab initio for mining laws in the DRC and Zambia. This study advocates for an inclusive overhaul of policies and a comprehensive review of guidelines to enhance governance in the cobalt mining sector.

1. Introduction

Cobalt serves as a symbol of identity for the Democratic Republic of the Congo (DRC) and Zambia (Toro et al., 2020). Both the DRC and Zambia are Central African nations characterised by a seemingly uniform endowment of natural resources, particularly cobalt and copper (Ali et al., 2024; Deberdt, 2024; Lydall and Auchterlonie, 2011). This assertion highlights the existence of a region known as the “Copperbelt”, which is situated between the two countries. This region contains over 55.5 million tonnes of copper and 3.6 million tonnes of cobalt (Crundwell et al., 2020). The DRC is the world’s largest supplier of cobalt, accounting for 70 % of global production (Beaule, 2023). In addition to being the world’s leading producer of cobalt, the DRC is also the foremost producer of copper in Africa (Sovacool, 2021; Vogel, 2022). The mining industry in the DRC constitutes 22 % of the country’s gross domestic product (GDP) and 28 % of its government revenue

(Radley, 2017). On the other hand, Zambia is the world’s ninth-largest producer of cobalt (Piçarra et al., 2021; Signé and Johnson, 2021) and accounts for around 9 % of the global cobalt output (Kolala and Dokowe, 2021; Mancini et al., 2021). Zambian cobalt and refined copper contribute 70 % of the country’s merchandise exports (Mobbs, 2008; Noyoo, 2021). Recent studies confirm that over 40 % of Zambia’s export earnings are derived from the mining industry, with copper and cobalt generating approximately 12 % of Zambia’s GDP (Cobalt Institute, 2023; Hilson et al., 2020; Sikamo et al., 2016). Furthermore, the mining industry directly contributes to a high employment rate among local citizens in the country (Kolala and Dokowe, 2021).

For the sake of clarity, cobalt is typically extracted as a by-product of either copper or nickel mining. The escalating demand for cobalt is attributed to its utilisation in superalloys and lithium-ion batteries (Zeng and Li, 2015) for consumer electronics and electric vehicles (EVs), which are integral to modern technology and efforts to mitigate carbon

E-mail address: balyaminuja@vuw.leidenuniv.nl.

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emissions (Li and Lu, 2020). However, the mining practices and governance of cobalt in the DRC and Zambia have been marred by a decade of armed conflict, environmental degradation, insecurity, and political upheaval, among other issues. Frynas and Buur (2020) compellingly argue that there is no evidence of a viable natural resource contributing to the economy and livelihoods of many resource-rich countries in Africa, as many citizens continue to live in abject poverty. For instance, the poor governance of natural resources has resulted in the DRC being ranked 176th out of 188 countries, with an average life expectancy of 59 years and 77 % of the population living below the poverty line (World Bank, 2020). Over 63 % of Congolese citizens survive on less than US\$1 per day (Mawejje, 2019). Furthermore, the DRC and Zambia are among the few countries globally that lack basic amenities such as drinking water and adequate electricity supply (Osowicki et al., 2018).

The mining sectors in the DRC and Zambia have faced legislative ambiguity, legal pluralism (Mensah, 2021), and political instability throughout the pre-colonial and post-colonial eras. For example, in 2002, the transitional government of the DRC privatised cobalt and other mineral reserves to secure loans from international donors (Van den Brink et al., 2020). Concurrently, a new mining code was enacted to attract foreign investments. Following the implementation of liberalisation and privatisation, international investors sought to protect their holdings. Meanwhile, the privatisation regulations attempted to suppress artisanal activities that operated under precarious working conditions, which subsequently barred artisanal miners from extensive tracts of land. The infiltration of unregulated practices by artisanal miners, the conflicting interests of formal and informal stakeholders, and inadequate coordination of mining administration resulted in forced evictions, violent protests, and tensions with local authorities, who oppose mining towns because they perceive them as unethical (Renzi, 2021). The implication is that many miners have exacerbated political tensions by contravening the existing legal frameworks. For instance, the artisanal and small-scale mining (ASM) sector frequently accesses large-scale mining (LSM) sites to independently engage in mining activities in pursuit of economic opportunities. This practice is legally characterised as a violation of Congolese law that can potentially lead to imprisonment. De Haan and Geenen (2016), Huggins (2023), and Kat-z-Lavigne (2019) posit that artisanal miners who infiltrate LSM sites in the southern DRC are committing gross trespass according to the stipulations of existing Congolese mining laws. Conversely, different parties may perceive mine-related actions as either legitimate or illegal, contingent upon their respective positions.

Given the aforementioned societal challenges and ambiguities in the existing mining legislation, there is a pressing need for a robust legal environment that safeguards the rights of all stakeholders in the DRC and Zambia, including health and safety rights. This lack of legal instruments raises several pertinent questions: What are the existing cobalt mining laws and the level of stakeholder awareness in the DRC and Zambia? Are the cobalt mining laws substantially inclusive or biased towards specific stakeholders, particularly companies and politicians? How can we characterise the engagement of stakeholders in the decision-making process regarding cobalt mining legislation?

1.1. Rationale of the study

Prior studies have examined the governance of natural resources in relation to legislative contexts in several developing countries, particularly in Africa, including South Africa (Alberts et al., 2017; Yeboah-Assiamah et al., 2017), Nigeria (Maass, 2009), and Angola (Ovadia, 2014). However, over the past five decades, the majority of research conducted in sub-Saharan Africa has focused on oil and gold resources. Relatively little scholarly attention has been paid to the evolution of cobalt mining legislation. Furthermore, a significant portion of the existing literature on cobalt addresses the geological, technical, and chemical aspects of lithium batteries. Consequently, this study aimed to

fill the knowledge gap by examining the evolution and operationalisation of mining regulatory frameworks in the DRC and Zambia as test beds for future research. This paper contributes to the existing literature on mineral law reform and stakeholder inclusion in decision-making processes related to natural resource governance in the Global South. It also seeks to mitigate the weak governance and uncertainty that pervade the mining region, particularly the cobalt zone.

1.2. Research aim and objectives

Given the exponential rate of global demand and dependency on cobalt, alongside the perceived weak governance of natural resources in Africa, this study explores the existing mining legal frameworks in the DRC and Zambia. The author employed a cross-sectional probing process to examine the status of cobalt mining legislation and its implications for the future economic prospects of the natural resource, as well as the protection of stakeholders' interests. This aim was pursued by identifying the drivers that necessitate effective regulations for mining in general, examining the existing mining regulations in the DRC and Zambia, and assessing the level of awareness regarding cobalt mining regulations. Additionally, the study investigates whether the formulation and implementation of cobalt regulations exhibit bias in both countries, as well as the methods through which stakeholders participate in decision-making processes related to mining legislation.

The remainder of this paper is structured as follows: Section 2 presents the trajectory of mining regulations in the DRC and Zambia; Section 3 elucidates the methodology applied in the study and the rationale for selecting the DRC and Zambia as case studies; Section 4 presents findings and discussions derived from the collected data; and Section 5 concludes the study and offers some policy recommendations.

2. Background on the mining regulations in the DRC and Zambia

Several academic debates exist regarding mining regulations in the literature in recent years (Campbell, 2003; Mwitwa et al., 2012; Hilson, 2020; Nakule, 2020). Particularly, Renzi (2021) opines that only adequate mining legislation and law enforcement can guarantee the economic prospects of any natural resource. Meanwhile, every country that is endowed with a natural resource establishes mining legislation to regulate the orderly exploration and development of such mineral resources. These laws accommodate the mining industry and create additional platforms for investment and innovation (Bazilian, 2018). The subsequent sections highlight the general and specific mining regulations in the DRC and Zambia.

2.1. The regulatory trajectory for cobalt mining in the DRC

Different laws have been enacted to regulate the mining industry globally (Barume et al., 2016). The distinction between pre-independence and post-independence mining regulation in the DRC is particularly intriguing. The December 1910 Decree was historically the first Congolese mining law (Vogel, 2022). The April 1919 Decree automatically replaced the 1910 Decree upon its implementation. Nonetheless, this order was explicitly enacted for mineral exploration and mining in Katanga, as the first mineral resource was discovered there. The Decree of September 24, 1937 repealed the 1919 Decree, which affected the entire mining industry of the country after a few years. This directive remained in effect until 1960, when Belgium granted the DRC its independence.

The DRC's mining laws have undergone significant changes since the 1960s. The country's first post-independence mining code was enacted in 1967 (Mining Code, 1967). The code established the state as the sole owner of mineral resources and introduced a system of concessions for mining companies. In the 1980s, the government introduced a new mining code that liberalised the sector and encouraged foreign investment (Mining Code, 1986). Among several mining laws enacted after

independence, the most notable was the 2002 Mining Code (CM), which repealed outdated mining laws (Renzi, 2021). In addition, this enabled consistent growth in foreign direct investments and copper output. In response to the instability produced by the prohibition on artisanal mining in 2010, the ministerial decrees of 2010 and 2012 came into effect to govern mining activity in the provinces of South Kivu, North Kivu, and Maniema, respectively.

In addition to the general Mining Code (CM) premised on Law No. 007 issued on the 11th July 2002, and the limited international supplementary treaties, the DRC exhibits ambiguous and ambitious cobalt-specific mining legislation. The introduction of the 2002 mining legislation was based on a draft supplied by the World Bank, with the principal aim of reviving the industrial mining sector following the First and Second Congo Wars (1996–2003) by making it accessible to foreign investors. The DRC has also ratified several international environmental accords to safeguard the environment, including, among others, the Basel Protocol on Liability and Compensation, the Convention on International Trade in Endangered Species of Wild Flora and Fauna, the Kyoto Protocol, and the Paris Agreement (International Financial Corporation, 2020; Renzi, 2021). These treaties obligate the DRC to adhere to global standards for the regulation of mineral resources.

In 2015, a heated discussion emerged among the Congolese government, civil society, and the mining industry of the DRC. This dialogue prompted the emergence of Law No. 18/001 of March 9, 2018 implemented by Decree No. 18/024 of June 8, 2018, which consequently repealed the 2002 Mining Code. This mining regulation raised royalties on various minerals and introduced a new tax rate referred to as “super profits” by many Congolese. Notably, these changes established a principal regulatory agency known as the Department for the Preservation of the Mining Environment, which was tasked with enforcing regulations concerning the protection of the mining environment (Renzi, 2021).

Due to historical and political factors, several mining companies in the DRC continue to receive preferential treatment from the government. For instance, although legislation grants the government the authority to seize private property in the name of the public good, many businesses and businesspeople persist in conducting their operations in a manner that causes significant harm to society and the environment (Deng et al., 2013; Renzi, 2021). This situation indicates that the enforcement of environmental laws and treaties, as well as the Mining Code, requires substantial improvement in the DRC. Furthermore, the contentious debates concerning tax rates and royalties may obscure the importance of addressing other significant issues, many of which remain unaddressed in the draft edition. Global Witness, a non-profit organisation that focuses on the connections between natural resource exploitation, conflict, and poverty, has highlighted these omissions. These include the repeal of crucial restrictions prohibiting politicians and senior military officials from owning mining licences, an opaque bidding process, and inadequate beneficial ownership disclosure requirements. Numerous mining corporations have entered into “conventions” with the government of the DRC that exist outside the tax and legal framework established by the country’s mining code, which is seen as an inconsistency. The current draft does not address this loophole. To attract international investors to the country, favourable fiscal incentives were implemented in 2002. However, these incentives have diminished the benefits of increased mining production for the Congolese government and its populace.

The institutional framework that governs the mining sector in the DRC is complex and fragmented. The Ministry of Mines is responsible for regulating the sector, but other institutions, such as the parliament and the judiciary, also play significant roles (Banza et al., 2009). Although the state-owned mining company, Gécamines, has historically dominated the sector, its influence has waned in recent years. The “grounded” values in Table 1 illustrate post-independence mining laws in the DRC.

Table 1

Post-independence mining regulations in the DRC identified by the respondents.

Code	Comment	Grounded	Density
2024	A new mining law was passed in the DRC.	1	0
2018: The Mining Code (Act No. 18/001)	None of the respondents knew the details of the legislation.	1	0
2002: The Mining Code (Act No. 002–2002)	Many respondents claimed to be aware of this legislation but its particularity is unclear.	9	0
1986: The Mining Code (Act No. 86–024)	Scholars referred to journals to mention a few regulations.	5	0
1981: The Mining Code (Act No. 81–013)	Scholars referred to journals to mention a few regulations.	5	0
1974: The Mining Code (Act No. 74–001)	Scholars referred to journals to mention a few regulations.	3	0
1967: The Mines Decree (No. 67–238)	All the respondents were aware of this mining law.	6	0

2.2. The regulatory trajectory for cobalt mining in Zambia

The Mining Proclamation of 1912 represents the inaugural mining legislation in the colonial context of Northern Rhodesia, now recognised as Zambia (Nalule, 2020). In contrast, the principal mining legislation currently in force in Zambia is the Minerals Regulations Commission Act of 2024, which was predominantly derived from the Mines and Minerals Development Act of 2015. To comprehend current mining regulations, it is crucial to understand the origins of Zambian mining laws. The evolution of Zambia’s mining regulations over the years has been influenced by both colonial and post-independence policies. Similar to other laws, in Zambia, mining laws amalgamate customary law, English common law, and legislation enacted by the parliament to regulate mining activities and practices (Fox, 2019; Kolala and Dokowe, 2021). Pre-colonial mining laws include the Mining Proclamation No. 1 of 1912 and the Mining Ordinance No. 13 of 1958, while the post-colonial laws are the Copper (Export) Tax of 1966, the Income Tax Act, the 1969 Mines and Minerals Act, the Minerals Tax Act of 1970, and the 1976 Mining Regulations. Since achieving independence in 1960, Zambian mining regulations have undergone numerous revisions and amendments. The Mines and Minerals Act of 1969 is regarded as the most effective mining law as it applies to all mineral resources (Ndulo, 1986). Furthermore, this legislation has demonstrated the government’s authority over Zambia’s mining sector, which enables the industry to contribute notably to the Zambian economy. Post-1991 reforms aimed to liberalise the sector, thereby attracting foreign investment; however, this has also led to criticism regarding inadequate regulation and oversight.

2.2.1. Significance of the 1969 mines and Minerals Act in Zambia

Given that mining concessions were fraudulently obtained, when the nationalist government inherited the mineral rights in 1964, it could not grant mining rights in areas where the national Company had been awarded exclusive rights, despite no development having occurred. This effectively precluded any entity other than the previous rights holders from utilising and developing the mineral wealth. To rectify this situation, the government instituted new legislation in 1969 to regulate all prospecting and mining activities. This legislation vested all rights of mineral ownership, exploration, and disposal in the state and established three categories of mining rights: prospecting licence, exploration licence, and mining licence. These rights are awarded for limited durations and do not confer ownership of the minerals. Their holders are tasked with influencing the growth rate and mining methodology while safeguarding the environment and landowners. The new system has

eliminated numerous anomalies inherited from the past and reduced the likelihood of their recurrence. It has also resulted in greater diversity among mining enterprises engaged in operations in Zambia. This mining law mandates that all new mining ventures must incorporate domestic participation. It is not uncommon for governments to invest directly in mining enterprises as part owners of a private firm or to obtain full ownership of existing companies through expropriation or nationalisation. The conduct of foreign enterprises in Zambia has contributed to the implementation of this regulation, and the state's fair dealings can mitigate the deterrent effect of this policy on mining investors. Before 1969, royalties and export taxes were imposed based on production and sales value. While these effectively generated income for the state, they were deemed unjust and served as a deterrent to mining investment. In 1969 and the preceding years, legislation was eliminated, and a more equitable system based on profitability was introduced. This underscores the importance of continually reviewing mining legislation to meet the industry's evolving needs, with the caveat that any changes must remain consistent with operating conditions that ensure the practical exploration and development of mineral projects and the security of cobalt mining rights. This has led to the current legislative framework.

2.2.2. Current mining legislation in Zambia

As part of the current legal framework, the 2015 Mines and Minerals Development Act has evolved into the Mines and Minerals Development (Amendment) Act (No. 14 of 2016), the Mines and Minerals Development (Amendment) Act (No. 29 of 2022), and the Minerals Regulations Commission Act of 2024, through several amendment procedures (Siaciti and Masinja, 2023). The Minerals Regulations Commission Act of 2024 regulates all aspects of the exploration and exploitation of minerals in Zambia. These current Acts are simultaneously administered by three institutions: the Ministry of Mines and Mineral Development, the Zambia Environmental Management Agency, and the Mining Cadastre Department. The responsibilities of stakeholders regarding mineral extraction and identification are delineated in this Act. Water usage, surface rights, environmental protection, mineral trafficking, and administration are all subject to its regulatory oversight. The Act governs radioactive materials in general rather than specifically addressing cobalt. However, the regulatory framework is characterised by ambiguities, including overlaps in laws, unresolved conflicts between ASM and LSM, zero enforcement mechanisms, and other governance challenges in the mining sector.

3. Methodology

3.1. Research method

This paper employed a qualitative methodology that involved semi-structured interviews with community representatives, civil society members, mine employees, and artisanal mine operators. Focus group interviews were also conducted to elicit expert opinions both domestically and internationally. The study conducted 20 semi-structured expert interviews from September to December 2022 at various institutions with individuals possessing mining knowledge in the DRC and Zambia. Additionally, part of the interviews was conducted with five experts on the subject matter located in the United Kingdom, Canada, Belgium, the Netherlands, and the United States of America. These expert interviews, often termed elite or critical informant interviews (Petintseva et al., 2020) aimed to engage those with expertise in cobalt mining in the DRC and Zambia. The semi-structured interviews included executives from 13 foreign and national mining companies in the DRC and Zambia. Based on research questions concerning the practices surrounding cobalt regulations, which directly involved employees of mining companies, the author also conducted semi-structured interviews with employees from September to December 2022 to incorporate non-expert perspectives from selected cobalt mining sites. The

study interviewed 25 principal officials from 13 foreign and 10 local mining companies, as well as artisanal mining leaders. The author posed identical questions during the expert and employee interviews. The average duration of the employee interviews was approximately 35 min. Due to the probing nature of the interviews, each session typically lasted between 25 and 40 min, with respondents assured of complete anonymity. Four categories of respondents were interviewed: employees of mining companies, selected ASM leaders, selected industrial and LSM leaders, officials from government ministries, and university scholars.

3.2. Choice of the case study

Several factors motivated the author's decision to select the DRC and Zambia as the focus of the case study. Natural resources in the DRC and Zambia have been prominent, particularly due to their historical copper and cobalt production during both the pre-colonial and post-colonial periods. In Africa, the DRC and Zambia remain the only countries where cobalt is commercially mined. Notably, during Joe Biden's presidency, a memorandum of understanding was signed with the governments of the DRC and Zambia to support their cobalt development for EV batteries in 2022 (U.S. Department of State, 2022). Furthermore, both countries collectively produce over 70 % of the world's cobalt (Sovacool, 2021).

There is a sufficient number of mining sites in the DRC and Zambia compared to other cobalt mining countries globally. However, not all mine sites and locations in the two countries were visited by the author due to issues of insecurity and financial constraints. It is also imperative to note that the DRC's cobalt mining industry commenced earlier and possesses robust historical profiles that are impossible to overlook. Zambia's copper and cobalt production had been known since 1920 when Great Britain monopolised the trade of the commodities mined in the country (Hilson, 2002).

The author deemed it appropriate to conduct the study in both countries to gain an overview of the differing models of cobalt production (ASM and LSM) and governance in Africa. This study also aimed to explore the distinct historical pathways through which their cobalt regulations have emerged and developed over time. In addition, the author was interested in comparing a francophone (French-speaking) country, the DRC, with an Anglophone (English-speaking) country, Zambia, in identifying similarities and differences in the factors that impacted the countries' regulatory pathways. Fig. 1 presents a locational map of the DRC and Zambia Copperbelt zone.

3.3. Sampling profiles

The reconnaissance survey, which entailed physical inspections, was conducted to identify and select existing and operational mining sites in the DRC and Zambia, as well as to ascertain their respective geographical locations, extents, and impacts on the multi-scalar supply chain for cobalt. Fig. 2 provides an overview of the profiles of the respondents.

Fig. 2 indicates that 11 of the 43 respondents were female. Seven of the females were employees of mining companies, two were LSM leaders, one was an ASM leader, and one was a scholar (academician) from a university. The 32 male counterparts comprised 11 employees of mining companies, five ASM leaders, four LSM leaders, six from government ministries, and six academic researchers (universities). This implies that the cross-sectional investigation adequately covered all necessary groups in the DRC and Zambia. It also aligns with Sovacool's (2021) assertion that the identified stakeholders are the relevant actors in the mining sectors of the two countries.

4. Empirical findings and discussion

Globally, the DRC and Zambia possess the potential to significantly increase cobalt production to address the projected shortfall over the next two decades (Shiquan et al., 2023). The author's exploration

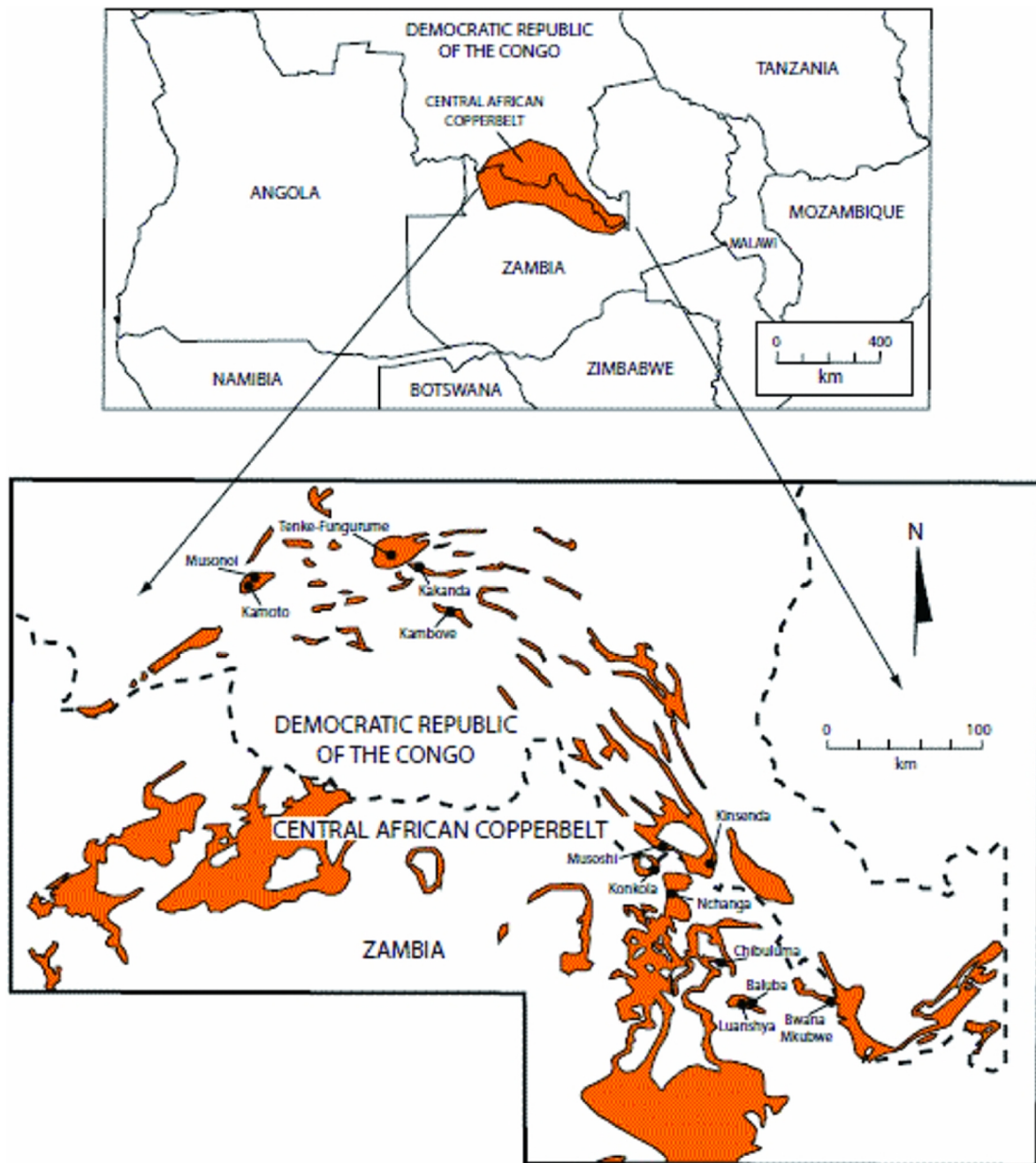


Fig. 1. Map of copper and cobalt deposits in the Central African Copperbelt.
Source: Created from Google Images

commenced with identifying rationales for effective mining regulation in the DRC and Zambia within the current context. The responses from the interviews revealed salient information, as indicated in Fig. 3.

The mining operations, governance, and administration in the DRC and Zambia have engendered a multitude of social and political crises and conflicts (Olaopa and Ojokrotu, 2016; Kesselring, 2017). The participants identified irregularities and disorder, difficulties in regulating ASM, child labour, and abuses of women's rights, as well as challenges in reconciling formal and informal mining operations and rights within these nations.

Elements and evidence of irregularities include improper mine closures and the abandonment of responsibilities, even by industrial miners. Studies addressing these irregularities and disarray highlight the emotional ramifications of financial misconduct (corruption)

perpetrated by various actors (Mwitwa et al., 2012; Fortmeyer, 2018). The widespread prevalence of child labour has reached epidemic proportions, which places children at risk of environmental and social hazards, including sexual violence that contributes to the dissemination of communicable diseases such as HIV (André and Godin, 2014; Sovacool, 2021). It is imperative to recognise that artisanal operations often conflict with principles of orderliness, even as society regards these practices as vital means of livelihood and survival. This situation raises a critical question regarding the recognition of both formal and informal institutions. The process of recognition fosters a hybrid of a peaceful and orderly society. In impoverished communities, managing an aggrieved and hungry populace becomes exceedingly challenging when their fundamental means of survival are overlooked. Upholding human rights is essential for the regulation of illegal and illegitimate mining

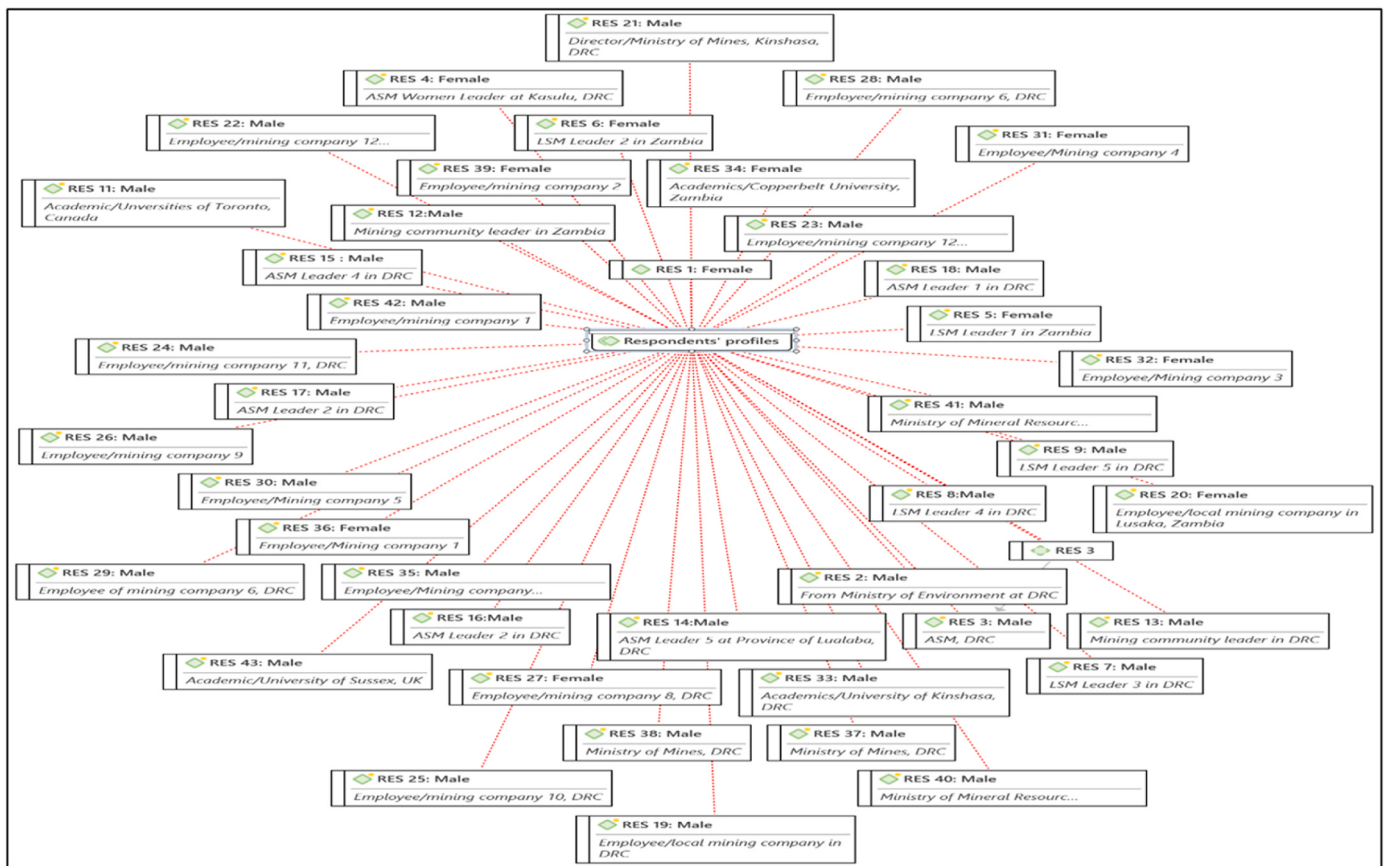


Fig. 2. Visualisation network of the respondents' profiles.

Source: ATLAS.ti 22 (Author's fieldwork)

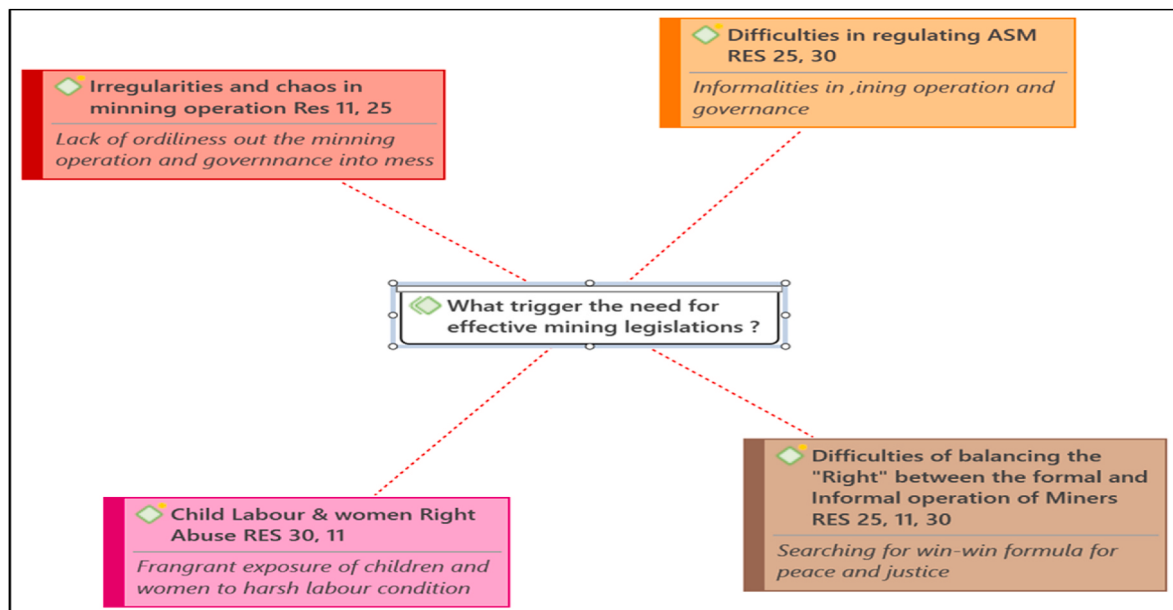


Fig. 3. Rationale for effective mining legislation in the DRC and Zambia.

Source: ATLAS.ti 22 (Author's fieldwork, 2022; 2024)

operations. It is disheartening that the regulation of artisanal and informal mining frequently becomes unmanageable (Sovacool, 2019), which prompts inquiries into the adequacy of legislation and rights within a contentious context.

1:1 ¶ 14 in CM1122: "The issue of scavenger miners puts industrial mining companies in a bind. They are damned if they do and damned if they do not."

1:2 ¶ 14 in CM1122: “If they prevent ASM miners entirely from operating, especially women and children, they are seen by local communities as a threat to be resisted and fought. Nevertheless, if they allow ASM mining on the fringes, they risk their reputations, and also that security guards will be accused of human rights abuses for permitting child labour. There is no ‘win’ in this formula.”

1:3 ¶ 14 in CM1122: "... operating, especially women and children ...
There is no 'win' in this formula."

The identified reasons for effective mining legislation hinge on the extent to which society and mining stakeholders are cognisant of the existing laws and the *modi operandi*. The provisions of each law are instrumental in determining the degree of societal orderliness. Effective mining legislation in the DRC and Zambia may necessitate a collaborative discourse among all stakeholders regarding the institutional context, rights, and governance.

4.1. The identified mining legislation variants and awareness levels in the DRC and Zambia

In this context, a pertinent question arises: What regulations concerning cobalt mining are the mining stakeholders in the DRC and Zambia aware of? In this regard, this paper examined the level of awareness of cobalt mining legislation as a subsequent step in the inquiry. Fig. 4 provides a visual representation of the legislative variants in the DRC.

Fig. 4 presents four essential findings regarding mining legislation in the DRC. There is evidence of a complete lack of awareness concerning cobalt mining legislation in the red node. The orange nodes illustrate that while the respondents were cognisant of the regulations, they still required a more profound understanding of the regulatory contexts. The pink nodes indicate that the respondents were primarily aware of colonial and other developed frameworks. The green nodes outline the formal legislation cited by the respondents; however, they encountered difficulties in articulating the contexts of the legislation. The legislation

referenced included the Decree of 1937, the Mining Code of 2002, the Mining Code of 2018, and the 2015 General Tax Code. The blue nodes represent unofficial strategies, such as agreements, negotiations, principles, and company-developed approaches, which highlights the emphasis placed on the identified regulations in the DRC. This illustration supports the findings of [Ahmadnia et al. \(2022\)](#), which suggest that the disaggregation of legislation reflects the complexities inherent in the governance of precious natural resources in the two Central African countries.

The mining laws of the DRC have their origins in colonial decrees (1910, 1919, and 1937) and extend to the modern 2002 Mining Code, with amendments in 2018 and 2024 (Katz-Lavigne, 2019). In contrast, this paper reveals evidence of a limited understanding of legislation in the DRC, particularly among ASM and LSM leaders, community members, and employees when compared to Zambia's case. The transcript from the interview provides further revelations:

1:44 ¶ 108 in CM1122: “I am NOT aware of any cobalt mining laws aside from the colonial regulatory framework.”

Scholars affiliated with both home-based and foreign universities demonstrated a significantly greater awareness of existing laws compared to other respondents, including local community members, ASM and LSM leaders, and employees; however, they still faced challenges related to implementation and conflicts. The paper confirmed a substantial awareness of the 2002 Mining Code, which was updated to the 2018 Mining Code.

1:8 ¶ 48 in CM1122: “The 2002 Mining Code is the current mining regulation that oversees the entire mining operation processes in the DRC.”

The main objective of the 2002 Mining Code was expressed as follows:

1:104 ¶ 204 in CM1122: “The DRC 2002 Mining Code allows foreign and domestic individuals to acquire mining rights and also provides

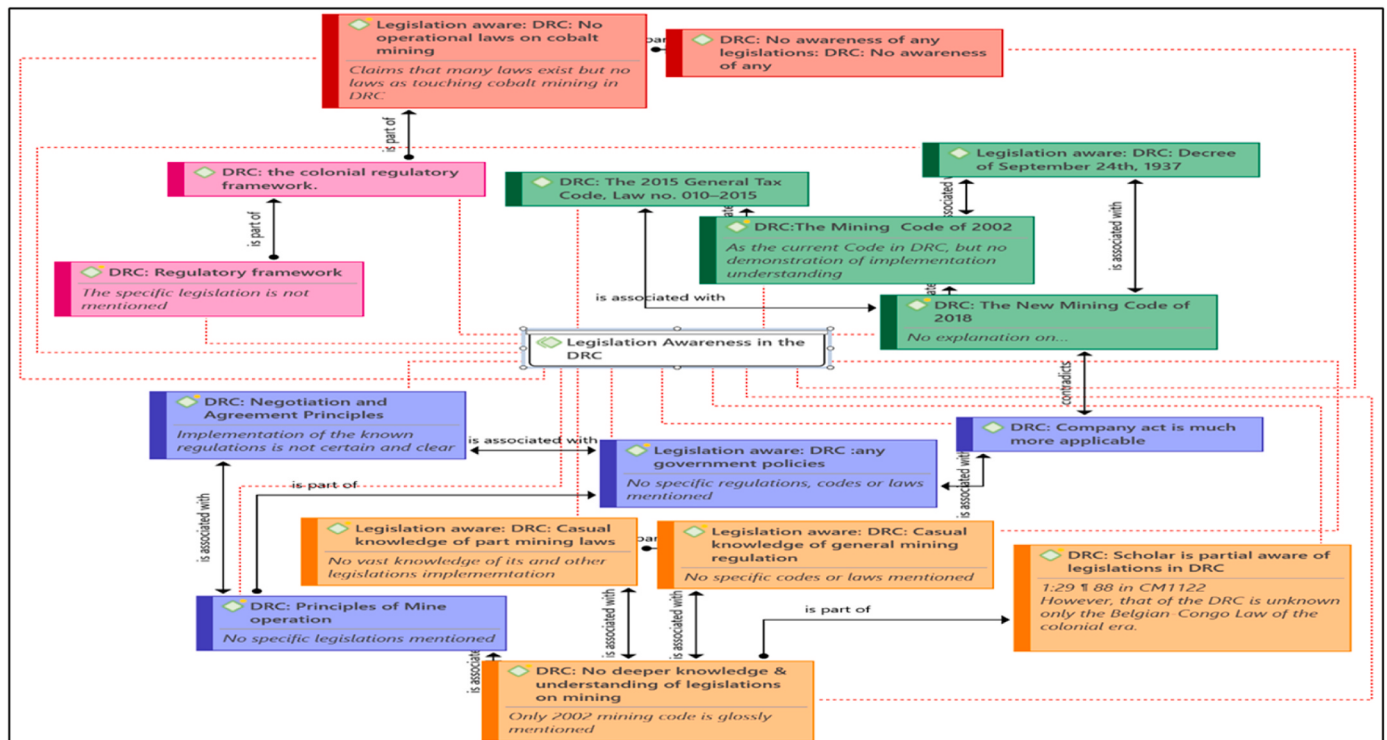


Fig. 4. The identified mining legislation variants and awareness levels in the DRC.
Source: ATLAS.ti 22 (Author's fieldwork)

rules to govern all aspects of mining, which include acquisition, transfer, operation, and termination of mining rights, environment protection, cultural heritage, protection of neighbouring communities, and tax and customs incentives.”

The code was reviewed in 2018 to achieve several objectives, including tax purposes.

1:101 ¶ 204 in CM1122: “The new code increased the state’s taxes on mining profits, doubled the government’s stake in new mining projects, and cancelled obsolete clauses under the older code.”

Scholars have asserted that the DRC 2018 Mining Code exacerbates disorderliness and tension due to sporadic tax increases (Lewis and Widmeier, 2022; Wakenge et al., 2021). It has been reported that regulatory frameworks were employed during both pre-colonial and colonial administrations, as posited by Huggins (2023). Until 2002, there was a lack of evidence regarding operational laws regulating cobalt or the mining sector, particularly among all stakeholders, including community members, ASM leaders, government entities, and formal companies. This aligns with Smith (2021), who argues that the governance of cobalt commenced from a period characterised by a lack of individual claims to mining portions. The government frequently resorted to developing and adopting principles and policies at various junctures, as indicated in Fig. 4.

4.2. Mining Legislation awareness in Zambia

Zambia’s mining laws have evolved from colonial ordinances (1912, 1958) to the Minerals Regulations Commission Act of 2024. An analysis of the interviews revealed nine legislative documents. The history of these regulations is partially documented in policy-informed texts and studies in the literature concerning the DRC and Zambia (African Mining Legislation Atlas, 2024). Similar to the DRC, comprehension of the regulatory context remains superficial, as indicated in Table 2. A government official from the Ministry of Mines in the DRC stated, for instance, that miners are not merely “thieves” but also individuals driven by necessity. In light of this, how can one delineate which actions in relation to cobalt mining are illegal and which merely represent an acceptable expression of fundamental human rights? A thorough

analysis of the perspectives of all legitimate stakeholders, viewed through the lens of existing legal instruments, could illuminate the implicit collusion of laws that govern the cobalt mining environment in both the DRC and Zambia. In Zambia, the Zambia Development Agency Act of 2006 regulates investment in all mineral operations, including copper-cobalt and others (Mobbs, 2008; International Cooperative Legal Guides, 2020). This Act promotes economic liberation, the creation of economic zones, and the integration of all stakeholders into the economic sectors and administrative frameworks. It was also intended to enhance the role of the mining ministry in facilitating effective governance.

Markedly divergent opinions on cobalt mining regulations exist. While several regulations were mentioned, the respondents endeavoured to demonstrate a deeper understanding of the laws. The author observed that the regulations referenced appeared to have been sourced from journals without a comprehensive understanding of their implications. The respondents also placed greater emphasis on the Zambia Mines and Minerals Act of 1969 compared to other regulations. The “grounded” values summarised in Table 2 encapsulate the extent of emphasis reflected in the findings.

It is essential to articulate the rationale behind the specific cobalt mining regulations in the DRC and Zambia. This was achieved through the coding of the interview transcripts generated from the relevant questions. Consequently, the author identified 26 interrelated codes that highlighted 15 reasons in the DRC and 10 reasons in Zambia, as presented in Table 3.

Several reasons justify the necessity of cobalt mining laws in the two countries, as listed in Table 3. The contexts of these reasons encompass economic, social, human, environmental, community, industrial growth, and good governance. Some of the identified reasons are proactive in nature, including economic growth, environmental protection, and industrial growth, while others are remedial, such as the reduction of corruption, financial irregularities, community conflicts, political upheaval, curbing colonial influence, and strengthening management, governance, and supply chain management, as well as improving profit generation. All the aforementioned align with the findings of a study by Van den Brink et al. (2020), which identified risks associated with the cobalt supply chain that necessitate a legal instrument. The findings presented herein therefore extend the initial general objectives of

Table 2
The respondents’ identified mining regulations in Zambia.

Code	Comment	Grounded
Minerals Regulations Commission Act of 2024	The general public have a low level of awareness.	1
Mines and Minerals Development (Amendment) Act of 2022 (No. 29)	The law is not popular among the general public.	1
Mines and Minerals Development (Amendment) Act of 2016 (No. 14)	None of the respondents mentioned this law.	0
Mines and Minerals Development Act of 2015	The general public have a low level of awareness; the law is not popular and as operational as that of 1969.	3
Zambia Mines and Minerals Act of 1969	No substantive understanding of the details from employees, leaders, and other respondents but all the respondents were aware of the legislation.	8
Pre-colonial and colonial regulations on mining in 1912	The respondents claimed there were pre-colonial and colonial regulations but were not sure of the details.	1
Copper (Export) Tax of 1966	Scholars referred to journals to mention a few regulations.	5
Income Tax Act and the Minerals Tax Act of 1970	Scholars referred to journals to mention a few regulations.	5
Mining Ordinance No. 13 of 1958	Scholars referred to journals to mention a few regulations.	6

Source: Author’s Interviews

Table 3
Identified reasons for specific cobalt mining laws.

S/ no.	DRC	Zambia
1	DRC/Zambia: The current administration of cobalt mining causes political upheaval	DRC/Zambia: The current administration of cobalt mining causes political upheaval
2	DRC: Colonial dominance	Zambia: Strategic minerals
3	DRC: Community conflict	Zambia: Cobalt profit maximisation
4	DRC: Corruption, equity, and insecurity	Zambia: Economic growth and demand increase
5	DRC: Economic growth and the need to avert conflict	Zambia: Economic development and corruption elimination
6	DRC: Financial irregularities	Zambia: Environmental protection
7	DRC: Good governance	Zambia: Level of corruption
8	DRC: Illegal mining	Zambia: Need for effective management
9	DRC: Industrial growth	Zambia: Supply chain protection
10	DRC: Insecurity and economic growth	Zambia: Uncertainty
11	DRC: Preservation for economic development	
12	DRC: West overdependence	
13	DRC: Child labour	
14	DRC: Cobalt is not an infinite resource	
15	DRC: Environmental protection and economic growth	

Source: Author’s Interviews

mining regulations identified in Fig. 3.

4.3. Stakeholders' description of regulation compliance

Having examined the awareness status of the sampled stakeholders, the author analysed the transcripts to determine whether mining companies and other actors comply with the identified regulations. Fig. 5 presents the visualisation perspectives from the interview transcripts.

Fig. 5 presents perspectives from ASM, LSM, and community leaders, scholars, employees, and personnel from the Ministry of Mining. The figure highlights the disaggregated perspectives on compliance in cobalt mining and operations in the DRC and Zambia among these stakeholders. While some respondents asserted compliance, others expressed varying degrees of disagreement. Additionally, there were instances where actors, such as ASM and LSM leaders, claimed adherence to their established rules and principles:

1:130 ¶ 281 in CM1122: “We have our set-up regulations at every site of cobalt mining.”

1:131 ¶ 286 in CM1122: “Our organisation [artisanal miners] abides by the rules set up by the local community in collaboration with the government.”

The ASM and LSM leaders, employees, and ministry staff held conflicting opinions. For instance, while the ASM leaders reported that the companies do not adhere to the mining laws, the employees and LSM leaders expressed a contrary viewpoint, asserting that companies occasionally comply with the mining regulations. These findings partially align with the views of Yıldız et al. (2024), who explored the interrelationship between economic benefits and legislative changes. Additionally, subsequent codes from the ministry staff interviews reference

the context of compliance.

1:129 ¶ 276 in CM1122: “They comply with other regulations guiding cobalt mining but do not in any way comply with the environmental protection laws in the DRC.”

1:128 ¶ 271 in CM1122 and 1:134 ¶ 301 in CM1122: “They abide by the mining regulations in their practices, especially human and environmental protection. They do abide by the laws concerning the environment only.”

The community leaders reported that companies often adhere solely to the existing mining regulations; however, several irregularities continue to persist.

1:139 ¶ 326 in CM1122: “They abide by the government’s mining rules. However, the government does not share any allocation generated from the mining companies.”

1:141 ¶ 331 in CM1122: “But the mining companies operating here are corrupt.”

1:139 ¶ 326 in CM1122: “They abide by the mining rules made by the government. However, the government does not share any allocation generated from the mining companies.”

The author observed a pronounced and unequivocal response from scholars indicating that companies fail to comply with mining regulations.

1:137 ¶ 316 in CM1122: “They do NOT abide by the regulations in practice, and many mining companies sideline the existing mining laws to promote their interests and profits.”

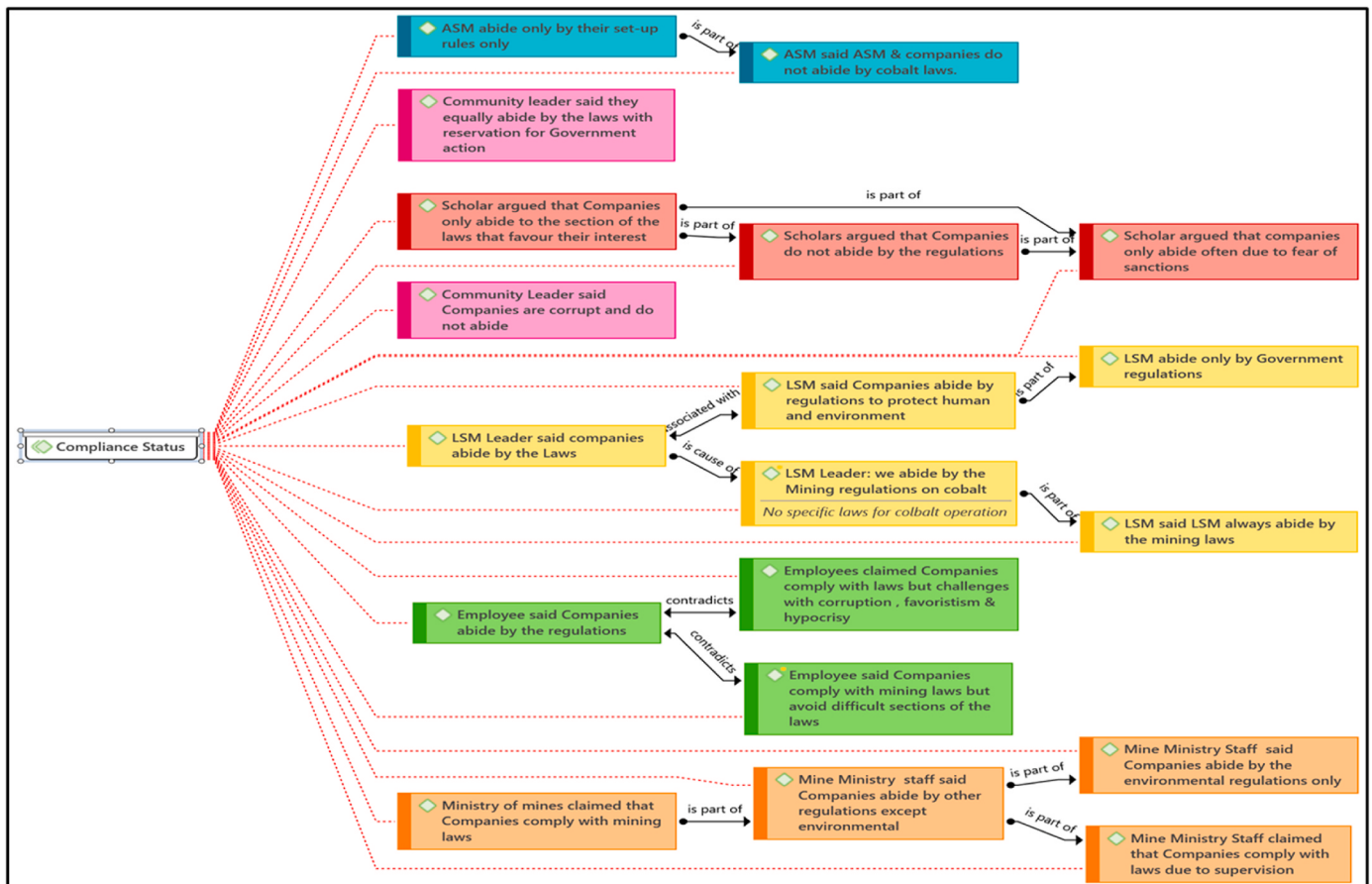


Fig. 5. Stakeholders' submissions on regulations compliance status.

1:138 ¶ 321 in CM1122: “Mining companies seem not to abide by mining laws because we still have cases of environmental pollution and child labour because of the corruption in the government and the mining companies.”

4.4. Analysis of the extent to which cobalt mining regulations benefit the four actors in the DRC and Zambia

In this section, the author endeavours to identify which stakeholders benefit from the existing regulations in the DRC and Zambia. The author subjected the interview transcripts generated from the questions to coding. Fig. 6 presents a visual overview of the results. The study subsequently counted the specific responses of the interviewees to identify the emergent categories. Initially, 15 categories emerged; however, only 11 categories possessed value, as indicated in Appendix 1.

Fig. 7 shows the trend of bias exhibited by the existing cobalt regulations in the DRC and Zambia. It illustrates that governments, mining companies, politicians, and other stakeholders significantly benefit from mining operations and their associated dividends. This observation substantiates the arguments and assertions made by Olopa and Oja-korotu (2016) and Kesselring (2017) regarding the persistent conflicts linked to the injustices that are prevalent in the mining sectors of these countries, which ultimately disadvantage the citizens. This is further evidenced in the following transcript:

1:202 ¶ 645 in CM1122: “Cobalt mining laws benefit the politicians a lot. I am aware that mining companies also benefit immensely from the regulations.”

1:205 ¶ 660 in CM1122: “Cobalt mining laws benefit politicians and international mining companies at the peril of other legitimate miners and the country’s general populace.”

1:215 ¶ 710 in CM1122: “The emergence of cobalt mining regulations seems to benefit the DRC’s international companies and any government of the day. It seems there is a collaboration in corruption between them.”

The findings reveal biased benefits favouring governments and corporations, which aligns with the broader “resource curse” narrative (Robinson et al., 2006), where resource wealth fails to translate into broad-based economic development or social welfare. Reports of corruption, environmental neglect, and child labour violations indicate systemic enforcement weaknesses (Badeeb et al., 2017) despite the existence of formal legislation.

It is undeniable that the cobalt mining sectors in the DRC and Zambia are characterised by overlapping formal and informal rules, as well as fragmented decision-making processes. This overlapping institutional arrangement often leads to governance gaps that hinder resource management and create legal inconsistencies, as argued by Syal (2025).

4.5. Stakeholders’ decision-making stance on the DRC and Zambia’s cobalt mining law formulations

In this section, the author seeks to answer the question: *How would you describe the stakeholders’ engagement in the decision-making process for cobalt mining laws?* The author subjected the interview transcripts generated from this question to coding. The analysis indicated that the government unilaterally makes decisions regarding operational policies and regulations related to cobalt mining in the DRC and Zambia. In the

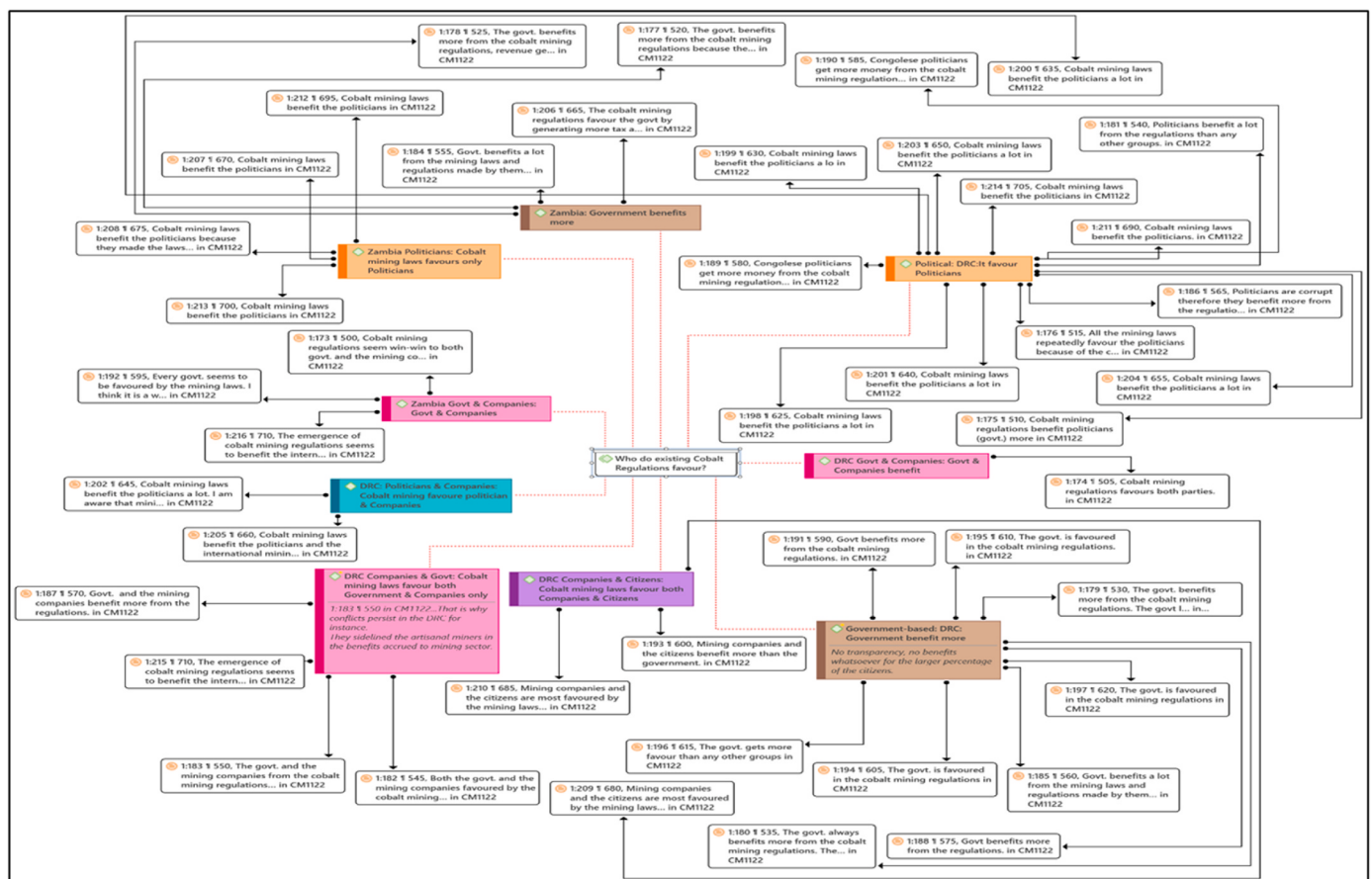


Fig. 6. Visualisation network of the disparity of cobalt mining regulations in the DRC and Zambia. Source: Author's analysed transcripts (ATLAS.ti 22)

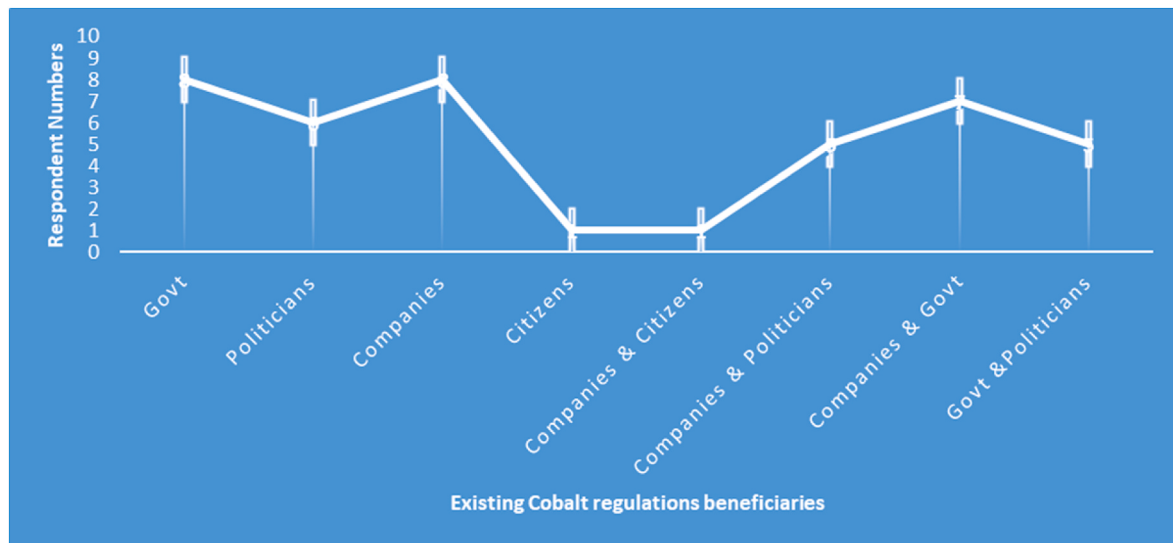


Fig. 7. The extent to which cobalt mining regulations benefit the four actors in the DRC and Zambia.

Source: Author's interview analysis

DRC, the author observed a commendable tripartite decision-making unit comprising the government, community leaders, and mining companies. In Zambia, such inclusive practices occur only among the designated or concerned stakeholders in a cobalt mine. According to [Elbel and O'Reilly \(2023\)](#), the inclusiveness of stakeholders in the decision-making process cannot be overstated. Similarly, [Ovadia's \(2014\)](#) interview-based research highlights the importance of state participation in the management of natural resources for sustainable growth. From reviewing the content of policy documents, [Ovadia \(2014\)](#) identified the potential benefits of the governance paradigm, thereby necessitating the inclusion of a participatory model. Furthermore, [Fu et al. \(2020\)](#) convincingly argue that cobalt requires a holistic regulatory approach from the involved stakeholders, given that the future of green energy and the advancement of EV technologies depend solely on cobalt supply. The implication of the foregoing findings is that an inclusive stakeholders' meeting has yet to be incorporated, likely due to deficiencies in specific cobalt governance legislation. [Fig. 8](#) illustrates the stakeholders' decision-making unit in the formulation of cobalt mining regulations in the DRC and Zambia.

Unilateral government decisions, as well as the decision-making units of governments and companies, appear to be significant issues in the two countries under examination. In this context, the need for effective and robust regulations is imperative. The author's analysis reveals that civil society members are excluded from the decision-making unit in the cobalt mining sector. As a result, there are notable lapses in mining governance, which lacks democratic principles. Evidence of one-sided governance is particularly pronounced in the alignment of governance and industrial artisanal companies, which suggests that not all stakeholders are enfranchised. Although government officials among the respondents highlighted challenges in enforcing regulations, citing limited resources and capacity, industry representatives emphasised the need for a stable regulatory environment, while civil society organisations advocated for stronger enforcement and greater transparency. Concurrently, local communities voiced concerns regarding environmental and social impacts.

Crucially, the absence of stakeholder inclusivity in regulatory decision making reflects a democratic deficit that undermines legitimacy and sustainability. As emphasised by [Curşeu and Schruijer \(2017\)](#), the

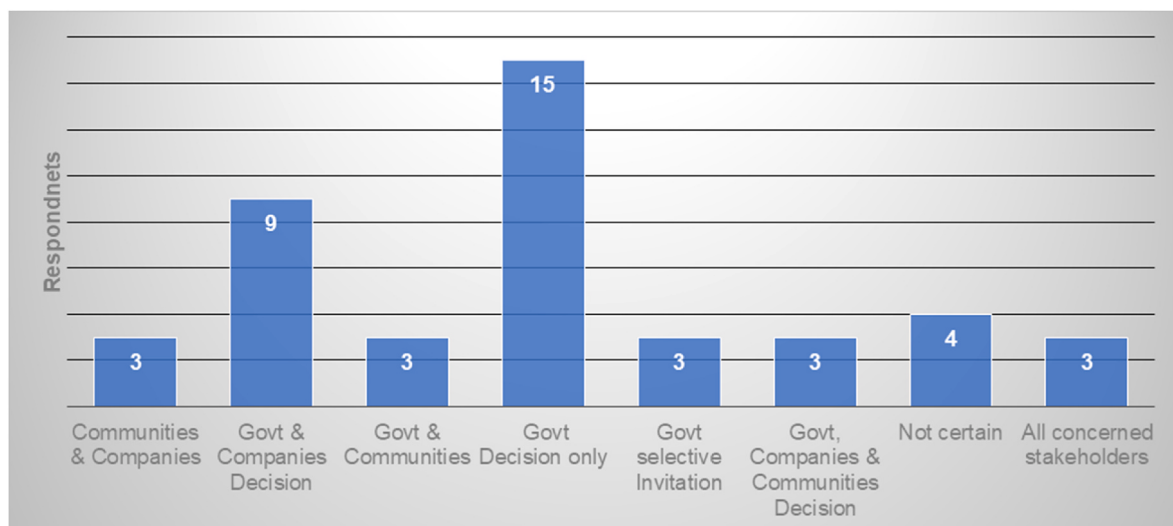


Fig. 8. Identified decision-making unit among cobalt governance stakeholders in the DRC and Zambia.

Source: Author's interview analysis

exclusion of civil society and local actors from policymaking processes risks perpetuating social tensions and conflicts, as their interests and rights remain marginalised. The principles of inclusivity must be integrated into any infrastructural development and natural resource management, as argued by Ackermann et al. (2025) and Andersen et al. (2021).

The findings presented in this paper resonate strongly with the theoretical framework and arguments established by Robinson et al. (2006), Butler et al. (2022), and Wilson et al. (2021). Their studies collectively underscore that marginalising stakeholders leads to the “resource curse”. Consequently, the author identified significant gaps in legal knowledge among stakeholders, biases in the implementation of mining laws favouring government and foreign mining companies, and limited stakeholder participation in legislative decision making for mining governance in the DRC and Zambia.

5. Conclusion, recommendations and policy implication

This study employed a cross-sectional investigative method to explore cobalt mining legislation and its implications for the future economic prospects of the natural resource and the protection of stakeholder interests. The author achieved this objective by analysing the factors that necessitate effective and operational mining laws, examining the cobalt mining legislation of the DRC and Zambia, assessing stakeholder awareness of these laws, and evaluating the compliance of mining corporations. Additionally, the paper investigated whether the development and implementation of cobalt mining regulations are biased in both countries and how stakeholders participate in cobalt mining legislative decision making. The study identified disaggregated perspectives among stakeholders regarding the legal knowledge that governs the cobalt mining environment, with substantial portions of the respondents demonstrating a lack of awareness of existing laws related to rights and ethics. The thematic analysis conducted in this study also indicated favouritism in the operationalisation of legal instruments, which was attributable to the exclusion of all concerned stakeholders from the policy formulation process for the laws in the DRC and Zambia.

The legislative procedures of mining law are shaped by a complex web of interests, power struggles, and institutional constraints in the DRC and Zambia. The author’s findings provide cause for the legislature to incorporate a more transparent and inclusive approach to mining law reform that prioritises the interests of all the identified stakeholders. Failure to do so could provoke mass mobilisation among those directly affected by mining projects. Understanding these dynamics is crucial for effective mining sector governance and sustainable development.

The novel contribution of this study is embedded in the way it links the exclusiveness of all the supposed stakeholders in mining industry to

incessant conflicts emanating between the artisanal miners and industrial miners in Africa.

Conversely, lacking strong regulatory oversight in the mining industry constitutes a significant problem in the DRC and Zambia. There is a need for a functional regulatory system, including specific mining laws for cobalt in both countries. Change is long overdue, and this opportunity must not be overlooked. For scholars of mining and environmental regulations, futuristic research should elaborate on the inconsequential regulations on mining industry to inform policy-makers on mineral resources governance in the global south.

5.1. Policy implication

The importance of cobalt mining legislation in the DRC and Zambia underscores the critical nature of policy implications in applied research. The significance and potential of the DRC and Zambia in the global supply chain for critical minerals vital for green technologies, such as batteries for electric vehicles, necessitates a policy solution to the current dilemma.

Considering the facts revealed, legislative and regulatory reforms will undoubtedly influence the political and economic framework of the mining sector. Examine resource nationalism and royalties, with a specific emphasis on the 2018 mining codes in the DRC, and the Minerals Regulations Commission Act of 2024 in Zambia. Recently, evidence of enhancement in revenue creation was documented. The implication is that the ripple effects of legislative reforms and their execution may lead to the consolidation of both local and worldwide latent values. The implementation of Cobalt mining legislation, as suggested by the paper’s content and conclusions, offers a pragmatic approach to the contentious issues related to the regulation of artisanal and small-scale mining. Consequently, the findings will improve the long-awaited traceability, labour standards, accountability, and openness.

Additionally, effective legislations for cobalt as a strategic mineral demand an international partnership and alliance of the DRC and Zambia with BRICS countries (Brazil, Russia, India, China and South Africa). This alliance will create a tendency for power shift between BRICS and G7 countries (the US, UK, Canada, France, Germany, Italy, and Japan), fostering robust regional collaboration, effective environmental governance, and energy policy.

Declaration of competing interest

I, Jeleel Balyaminu declare that there is no financial influence from any quarters associated with this piece of writing.

Instead, I would like to thank all participants of the study especially the interviewees who took their time to grant the interviews.

Appendix 1. Beneficiaries of the existing cobalt regulations in the DRC and Zambia

Govt.	Politicians	Companies	Citizens	Companies & Citizens	Companies & Politicians	Companies & Govt	Govt & Politicians	Govt & Citizens	Politicians & Citizens	All four actors
8	6	8	1	1	5	7	5	1	1	0

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