

The Dark Side of Samsung's Value Chain: The Human Costs of Cobalt Mining "BLOOD, SWEAT AND COBALT"

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Abstract

Samsung has been implicitly linked to human rights abuses and wider social downgrading propagated within the Democratic Republic of Congo (DRC). Reports by different studies have shown artisanal cobalt mines (ASM) to exploit child labour and subject workers to perilous conditions. The IT multinational is dependent upon Congolese cobalt as a key element in lithium-ion batteries used to produce their array of electronics. However, irresponsible cobalt sourcing practices undertaken by Tier 1 suppliers, Glencore and Huayou, have resulted in ASM operations being incorporated into Samsung's global value chain, as Tier 2 suppliers. Analysis of the relationships underpinning Samsung's cobalt value chain theoretical framework, highlights the presence of a relational governance structure, with captive elements among upstream Tier 1 and Tier 2 suppliers. Samsung is thereby reliant upon both Glencore and Huayou to transmit and enforce private codes of conduct down the value chain to expel human rights abuses. In conjunction, the DRC's weak and unstable institutional environment has facilitated corruption and the improper enforcement of laws across the ASM industry. It is thereby imperative that Samsung takes ownership of the issues present within its value chain, as both Tier 1 suppliers and the Congolese government have failed to ensure responsible cobalt sourcing practices to date. This report recommends that Samsung adopt a holistic action plan, not only utilising their own resources and capabilities, but also those of critical stakeholders including Tier 1 suppliers, NGOs and the DRC and South Korean governments. Most prominently, this report suggests that supply chain transparency can be improved using certificates of origin and blockchain technology. Furthermore, it is recommended that poverty alleviation is targeted as a key measure through "Cobalt for Development", an action plan designed to instigate both social

and economic upgrading within ASM operations and the wider community. By employing a multi-scalar approach and addressing the issues inherent across multiple governance levels, Samsung can ensure a responsible source of cobalt be sustained.

Keywords

Value Chain, Ethics, Child Labour

1. Introduction

The demand for Cobalt is at an all-time high as it is a critical component for lithium-ion batteries and therefore a component of products such as mobile phones and electric vehicles. Today, more than 50% of the world's supply originates in the Democratic Republic of Congo (DRC) (USGS.gov, 2020), and about 20% of Congo's supply is sourced in artisanal mines. Artisanal Mining (ASM) is frequently linked to significant human rights violations as miners and children are often forced to work without any safety equipment down mine shafts.

In 2016 and 2017 Amnesty International (Amnesty) issued two reports that disclosed mining conditions in the DRC and confronted companies with the fact that they are sourcing materials from artisanal mines, thereby enabling child labour and other hazardous business practices in their supply chain (Amnesty International, 2016, 2017). One of these companies was Samsung Electronics, resulting in devastating public press (e.g. Wakefield, 2016).

Samsung relies on key Cobalt suppliers in the DRC and tries to establish responsible standards in their supply chain through business partners. However, they are currently not implementing sufficient recommended measures that are responsible for eliminating child labour and improving the working conditions in Congolese artisanal mines.

This report aims to analyse Samsung's Cobalt supply chain in the DRC with a specific focus on Cobalt that originates from artisanal mines. Identifying key economic and institutional players and their impacts within the supply chain will help the understanding of the ASM issue at its core and the development of appropriate recommendations. The purpose of this report is to construct measures that are sustainable and tackle the above-mentioned human rights issues at its core. This will not only improve Samsung's global standing but also ensure a long-term and sustainable supply of the strategically important material Cobalt.

The Amnesty report includes many firms and a highly complex supply network in the DRC. For practicability reasons and to provide feasible recommendations, the report focuses on key suppliers and chokepoints in Samsung's supply chain. This allows an in-depth analysis of the relevant players and their relationship to ASM instead of a generic analysis of each stakeholder, which might not be related to the core of the issue.

After giving a brief introduction to the ASM issue in section 1, section 2 then

illustrates the report's methodology. Section 3 provides a thorough analysis of Samsung's Cobalt supply chain and the key players in the DRC related to the issues on site. Next, the analysis's key findings are summarised in section 4 and addressed further in section 5, which aims to provide feasible and expedient recommendations for the short and long term.

This paper links Gereffi's (1994) theoretical GVC framework to the practice of Samsung's cobalt supply chain in the Congo. To the best of the authors' knowledge, there is no previous study that examines this specific practical context using the previously mentioned theoretical framework. In addition, the cultural and institutional context of the company's country of origin as well as the nation of cobalt extraction, namely DRC, are analysed in detail allowing conclusions to be drawn.

With this study, a significant contribution is made to the supply chain research community, while also being intended to assist Samsung's management in reducing unethical practices in their sourcing of cobalt in the future, and to eliminate it entirely in the long term.

2. Methodology

This report highlights the social issues related to Cobalt mining in Samsung's GVC. To apprehend the issues' context and the key stakeholders, an analysis of the GVC has been undertaken as it provides a holistic view of the industry and its implications for suppliers in developing countries (Gereffi & Lee, 2012). Whilst the top-down analysis focuses on the governance and the standards suppliers are required to meet in order to participate in the GVC, the bottom-up standpoint focuses on the socio-economic consequences of the GVC and upgrading (Gereffi, 2018).

This report is based on the analysis of secondary literature. By investigating context-relevant newspaper articles, reports from non-governmental organisations (NGOs), official documents from Samsung, such as the company's sustainability reports of 2018 and 2019, and its suppliers, academic articles and books, the authors were able to map Samsung's Cobalt supply chain. In doing so, the source of data is triangulated, minimising bias and ensuring relevant and valid data (Denzin, 2012; Yin, 2009). Even though the data has been carefully selected to provide quality recommendations, the report presents some limitations. The secondary data used is mostly issued from Western sources available in English, which could lead to a certain bias. Secondly, primary data could have greatly enriched the reports, but could not be accessed for this research. Finally, the methodology inherent to the GVC analysis excludes the specific resource-based view of Samsung, which could have helped the development of further recommendations but does not alter the quality of those developed later in this report as they are not related to internal resources.

3. Samsung's Cobalt Supply Chain

The increasing fragmentation of value-adding activities and internationalisation

of networks has led to complex relationships between firms and suppliers across borders (Sideri, 1997; Buckley & Ghauri, 2004). The power and knowledge dynamics between lead firms and their internationally dispersed suppliers can be explained by the presence of Buckley's (2009) global factory. In this context, Samsung in South Korea is the hub of an efficient network structure (Buckley & Casson, 1998; Siegfried, 2011) in which the Congo is constrained to play the role of the supplier country for the labour-intensive Cobalt mining industry. Such structure allows investigation into the dynamic relationship between Samsung and its suppliers through the lens of Gereffi's (1994) GVC theoretical framework. After a brief introduction of Samsung and involvement in ASM, this section aims to provide a holistic view of Samsung's Cobalt supply chain using GVC analysis (Figure 1).

3.1. Samsung—The Company and Their Dependency on Cobalt

Headquartered in South Korea, operating in 74 countries and employing more than 300,000 people, Samsung Electronics (Samsung) is one of the major IT companies in the world (Samsung, 2019). Their product range includes displays/screens, household devices, TVs, electronic semiconductors and mobile devices. Besides semiconductors, especially the “information technology & mobile communications” is a particularly critical business segment, accounting for more than 36% of Samsung's revenue in 2019 (Figure 2).

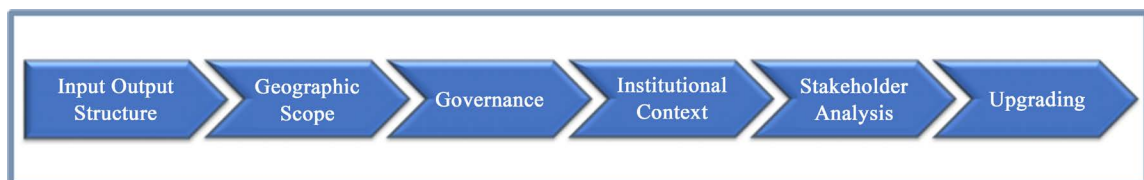


Figure 1. GVC Dimensions; adapted from Gereffi et al. (2005).

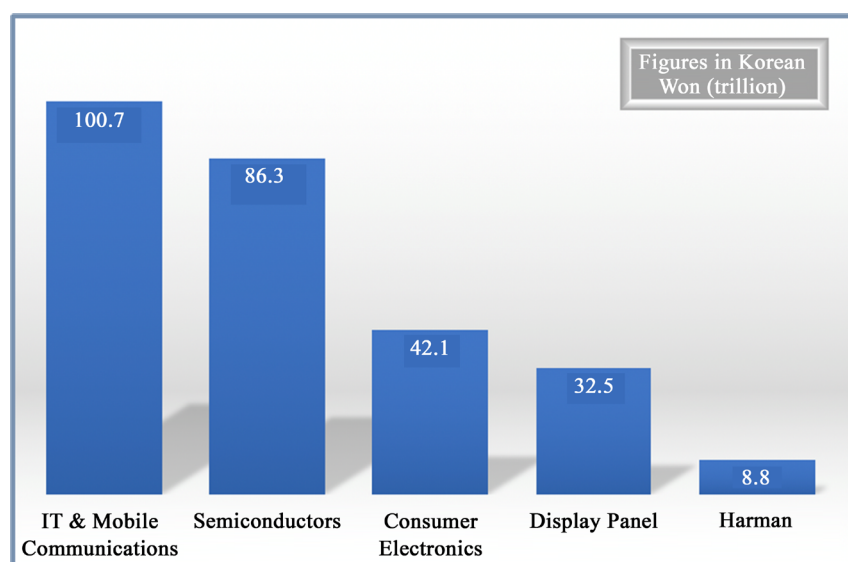


Figure 2. Samsung's revenue 2018 by segments; source: Samsung (2019).

Figure 2 demonstrates the importance of mobile phones and other mobile communication devices for Samsung, products that are currently all reliant on Lithium-ion batteries which include Cobalt as one key component. Despite current research projects, dependency on Cobalt is expected to remain high as there is currently no alternative proposed to replace it in the near future (Cobalt Institute, 2020). The sourcing of Cobalt is directly linked to ASM and serious human rights violations (Amnesty International, 2016, 2017). This chapter analyses Samsung's position in the Cobalt supply chain in order to give targeted recommendations, aiming to improve Samsung's position and establishing a long-term, sustainable Cobalt supply.

3.2. Input-Output Structure and Geographical Scope

The Input-Output structure generally maps out the whole value chain from the sourcing of all inputs until the product/service reaches the final customer (Gereffi & Fernandez-Stark, 2016). However, as the issues investigated in this report primarily relate to ASM in DRC, this report concentrates on the unique section of the value chain between Cobalt mining and the resources used in the production process of Samsung. **Figure 3** demonstrates a deep dive on Samsung's upstream Cobalt sourcing in DRC, including two major suppliers—Huayou and Glencore—which are both linked to ASM.

Cobalt in the DRC is either sourced from artisanal mines or large-scale mines. Artisanal miners sell their Cobalt to local traders who then sell to smelters/refiners, which are considered a critical chokepoint in the ASM supply chain (Amnesty International, 2017). One key smelter and Samsung supplier who operates through a wholly-owned subsidiary in the DRC is Huayou Cobalt (Huayou). After immense public pressure in 2016, the company increased its efforts to reduce child labour in their supply chain. However, they still purchase

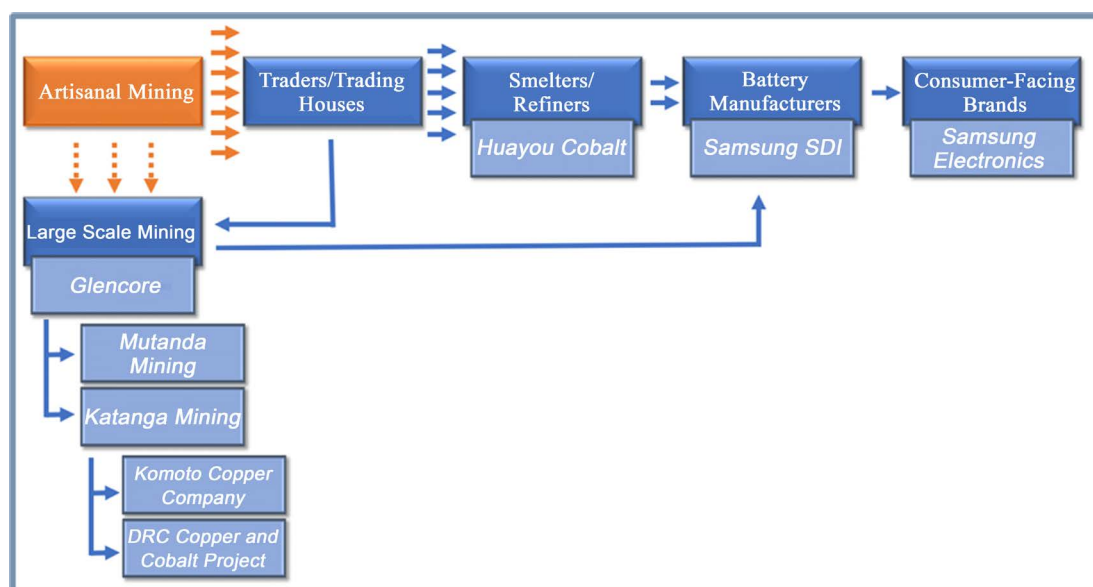


Figure 3. Samsung's Cobalt Supply Chain in DRC; adapted from: Amnesty International (2017).

Cobalt that originates from ASM partly because they acknowledge that ASM plays a vital role in the survival of mining communities (ibid). This demonstrates that Huayou generally understands the importance and impact of ASM in DRC. However, they currently improve due diligence standards solely to hedge risks and not solve the severe human rights issues in their supply chain at their root.

Another major player in DRC is Glencore, who recently announced the expansion of their relationship with Samsung to become a primary Cobalt supplier (Reuters, 2020). Glencore operates through a network of wholly-owned subsidiaries in the DRC. These comprise of two mining companies—Mutanda and Katanga Mining—the latter of which is managed by two joint ventures—the Kamoto Copper Company and DRC Copper and Cobalt Project (Glencore, 2020; Katanga Mining, 2020; Siegfried, 2015a). As a significant player and supplier for companies like BMW and Samsung, Glencore needs to ensure sustainability in their supply chain, which is currently not adequately reflected by their local operations. Their Mutanda Mining operations, for instance, were shut down because they were not considered profitable enough (Biesheuvel & Clowes, 2019), forcing employees to go back to ASM sites. Glencore's second wholly-owned subsidiary, Katanga Mining, refers to 10-year-old data when it comes to CSR policies and does not consider the implementation of standards which are strongly recommended by Amnesty (Katanga Mining, 2020). Their operations include two open-pit mines, facilities that are hard to monitor and therefore encourage or allow for illegal ASM. Glencore assumes that about 2000 of those illegal artisanal miners work on Katanga Mining sites every day (Glencore, 2020). Furthermore, it is expected that large scale miners such as Glencore purchase material from traders (who are buyers from ASM) to complement their production.

Summarising the above, Glencore and Huayou are key suppliers for Samsung, sourcing from a dispersed range of local wholly-owned subsidiaries, traders and concomitant artisanal mines. Because Samsung is not establishing any presence in the DRC themselves, they are wholly dependent on their key suppliers and their autonomous enforcement of a sustainable supply chain.

Regarding the geographical scope of Samsung's Cobalt supply chain, all ASM-related activities take place in DRC. Samsung has its HQ in South Korea; Glencore is based in Switzerland and Huayou in China. However, all their activities in DRC are managed through a network of wholly-owned subsidiaries in the DRC. For this reason, this report will put particular emphasis on the host-country environment.

3.3. Governance Structure

The dynamics of governance control and co-ordinate the organisation of economic activities in the Cobalt industry (Dannenberg & Nduru, 2013). Analysing Samsung's GVC governance structure enables the identification of power

asymmetries in different relationships. Utilizing Gereffi's (1994) theoretical framework, Samsung claims a leading role and uses its dispersed network of suppliers to realise production (Lund-Thomsen & Lindgreen, 2014).

The governance of Samsung's value chain is conceptualised as a buyer-driven value chain, given that Samsung controls operations by demanding cobalt suppliers to meet its private standards (Gereffi, 1994; Gereffi & Fernandez-Stark, 2011). It is also conceptualised using the more elaborative 5-fold governance typology (Gereffi et al., 2005; Figure 5), accounting for varying relationship dynamics between Samsung and suppliers (Glencore and Huayou). The overall governance of Samsung's value chain is relational, with captive elements among upstream production between Tier 1 and further component and material suppliers (Figure 4 and Figure 5).

Although the lead firm maintains some control over its Tier 1 suppliers, there are equal power dynamics between Samsung and Tier 1 suppliers, due to mutual dependence involving high levels of asset specificity, originating from their long-term relationship (Figure 4) (Gereffi et al. 2005), consequently resulting in lower transaction costs (Williamson, 1975) within their collaboration. The costs for Samsung to switch suppliers are also high due to the length of time required to build relational linkages (Gereffi & Fernandez-Stark, 2016). Hence, it is vital that Samsung maintains and improves these relationships which hold strategic

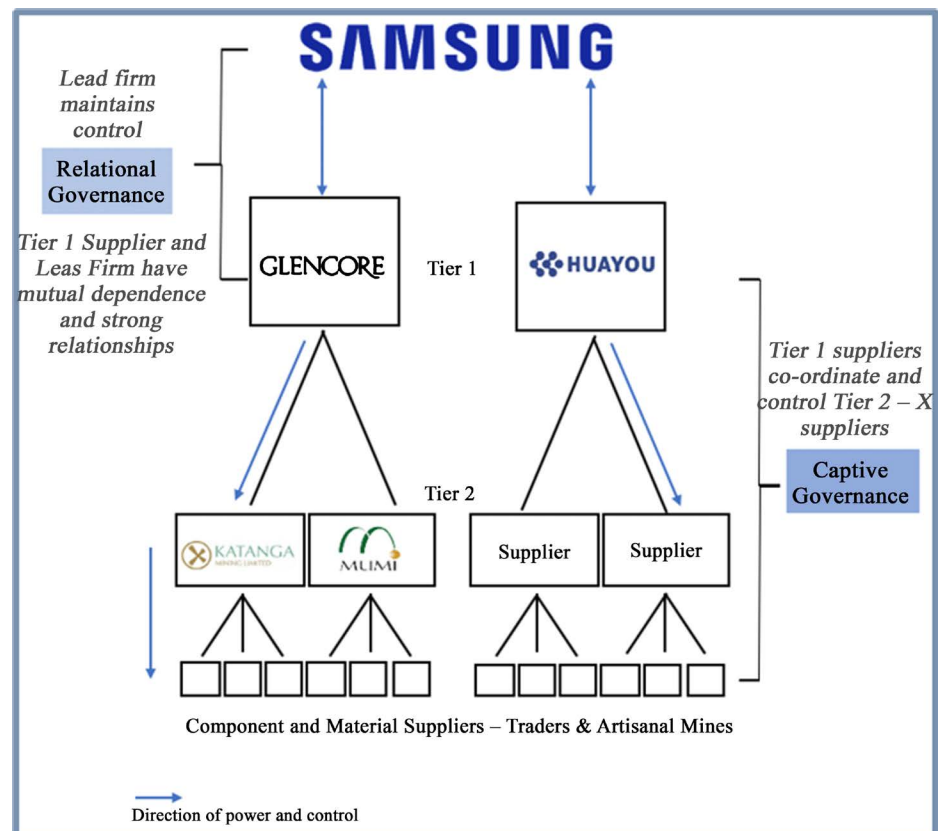


Figure 4. Samsung's Cobalt Value Chain Governance Structure; modified from Gereffi et al. (2005).

		Institutions shaping business relations and locations			
		Governance Type	Complexity of Transactions	Ability to codify Transactions	Capability in the Supply Base
Degree of coordination ↑ Low Power asymmetry ↓ High	Market	Low	High	High	
	Modular	High	High	High	
	Relational	High	Low	High	
	Captive	High	High	Low	
	Hierachy	High	Low	Low	

Figure 5. Characteristics of Governance Types related to Samsung's Cobalt Value Chain; modified from Gereffi et al. (2005).

value for Samsung's business model, to ensure a sustainable supply of Cobalt going forward.

Captive elements are evident in the unidirectional flow of information from Tier 1 to further Component and Material suppliers (Figure 4). Low on-site technical standards and skills within artisanal mines require Tier 1 suppliers to exert a high degree of control over Tier 2 operations. This high-power distance enables Tier 1 suppliers to exploit their market power and prevents economic upgrading at an operational level.

Pressures in the buyer-driven value chain have implications for different actors in the GVC. For instance, while the lead firm and Tier 1 suppliers exert direct high power, Tier 2 suppliers have lower bargaining power. Therefore, although Samsung captures value produced at the supplier level, it also faces higher monitoring costs. The relational network between the lead firm and Tier 1 suppliers is therefore essential for transferring responsibility onto Tier 1 suppliers to control those in Tier 2.

3.4. Institutional Context

3.4.1. Samsung's Institutional Environment

The GVC is embedded in an institutional context which varies across international, regional and local levels. Institutional variation may constrain the extent to which Samsung's ethical standards are met down the value chain (Alford & Phillips, 2018). Therefore, to fully address Samsung's ASM issues, this section aims to analyse the domestic and host institutional environment.

As Samsung is the largest chaebol in South Korea, it benefits from a strong working relationship with their home Government (Pae, 2019). This close relationship is a manifestation of the informal social network, yongo, deeply embedded in cultural context (Hofstede, 2007). Alongside stable formal institutions (Figure 7), there is still a strong commitment to this network as it enables efficient information flow and increased trust in inter-firm relationships (Horak &

Klein, 2016; Su et al., 2007; Siegfried, 2015b). In this context, Samsung should use its close relationship to encourage the government to push DCR for more regulated ASM sites as well as greater social upgrading efforts. In the long run, this might be beneficial to South Korea as a stronger relationship with the Congolese government would enhance its national reputation, which could improve trade relations and agreements. However, this could be a challenging implementation as the South Korean government has previously shown reluctance to improve labour rights in their own country (Liem, 2014).

Due to informal institutional variation, there are contrasting ideas surrounding local and global perceptions of child labour and satisfactory standards of working conditions (Lund-Thomsen & Lindgreen, 2014). Although normative institutions in developed countries enforce stringent health and safety standards and completely prohibit child labour, artisanal miners in developing countries may accept poorer working conditions and child labour (Lund-Thomsen, 2008). Therefore, the involvement of Samsung's GVC in DCR's local institutional context generates difficulties in both eradicating child labour from production and satisfying global and local stakeholders (Neilson & Pritchard, 2009).

3.4.2. The Political Context of DRC

Colonialism—resulting in political instability—coupled with war and one of the highest corruption rates in the world, led to the spread of ASM activities in Congo (Figure 6; Trautman, 2013; Transparency International, 2019). An industry which serves as a livelihood for large parts of the population. This type of mining, however, leads to significant social problems. For example, the employment of children has become a widespread phenomenon, calling for strict governmental regulations and corporate engagement (Buxton, 2013).

Corruption in DCR may also constrain the plans of the facilitative Congolese government (Horner, 2017) to play an even more prominent role in global Cobalt

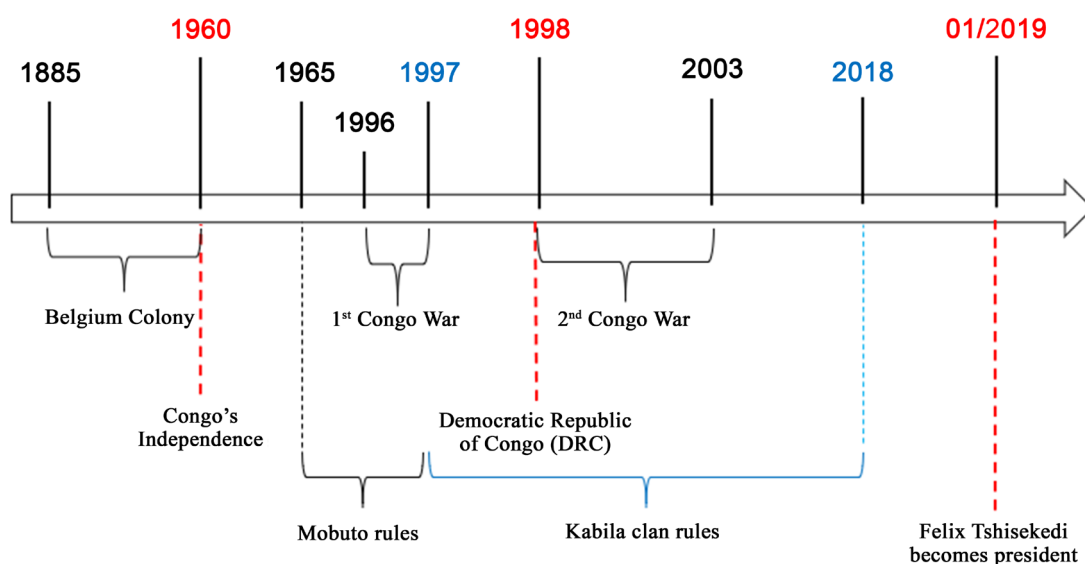


Figure 6. A political timeline of DRC; based on: Autesserre (2010).

production (Clowes & Kavanagh, 2020). The weak enforcement of regulative institutions (Figure 7), due to a lack of governmental resources and enforcement capabilities, creates a vulnerable space for workforce casualisation and for the relationship between Samsung and its Congolese suppliers (Trienekens & van Dijk, 2012; Benjamin, 2011). However, last year's election of the new president, Felix Tshisekedi, suggests a more promising future for the Nation-State as it was one of the first elections without extensive violence for many years. Projects mostly funded by the World Bank and the U.S. Department of Labor could also help to improve the situation in DRC.

3.4.3. The Economic Current State and Outlook of DRC

DRC's cobalt monopoly power suggests a flourishing and stable economic situation. Yet, the current political instability and culturally embedded corruption issues are the optimal breeding ground for poor working conditions and child labour (Le Petit, 2019).

GDP is considered as an indicator of economic wellbeing. As illustrated in Figure 8, the DRC GDP rate is expected to converge with South Korea in the course of 2020, caused by the "resource curse". Additionally, in countries with political instability, high corruption and armed conflicts, such as the DRC, the economy is reduced to local raw materials (Auty, 1993).

3.4.4. Specific Regulatory Institutions and Initiatives Related to Mining in DRC

The following Table 1 and paragraphs show governmental divisions and international conventions regarding mining in DRC, revealing implications of what has already been tackled and what is still to be resolved.

The International Labour Organization (ILO) and UNICEF are key global players active in developing minimum labour standards and decent working conditions within the DRC. Besides international support, the Congolese government

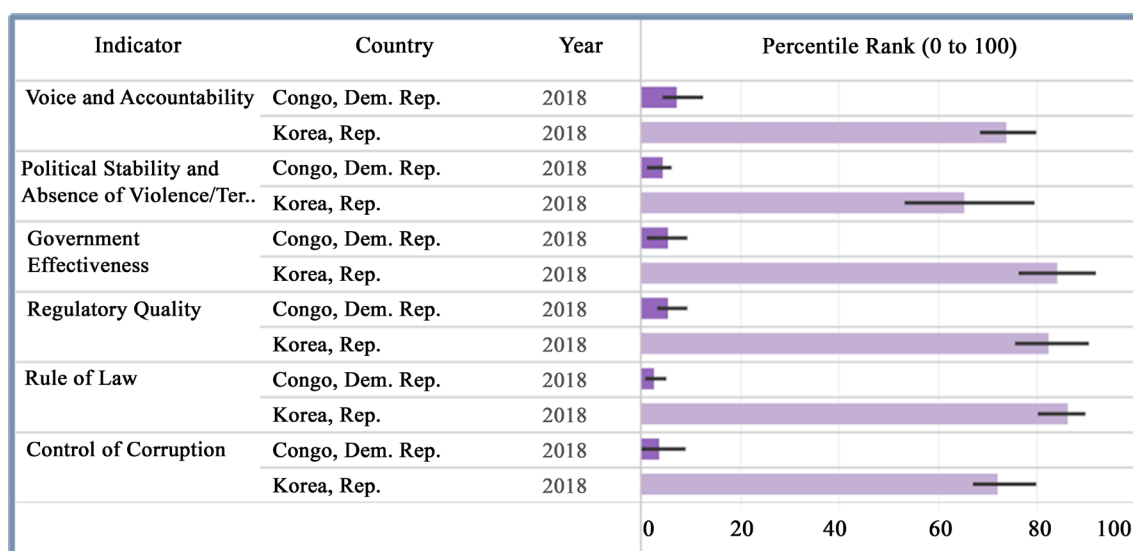


Figure 7. WGI of South Korea and DRC; source: World Bank (2018).

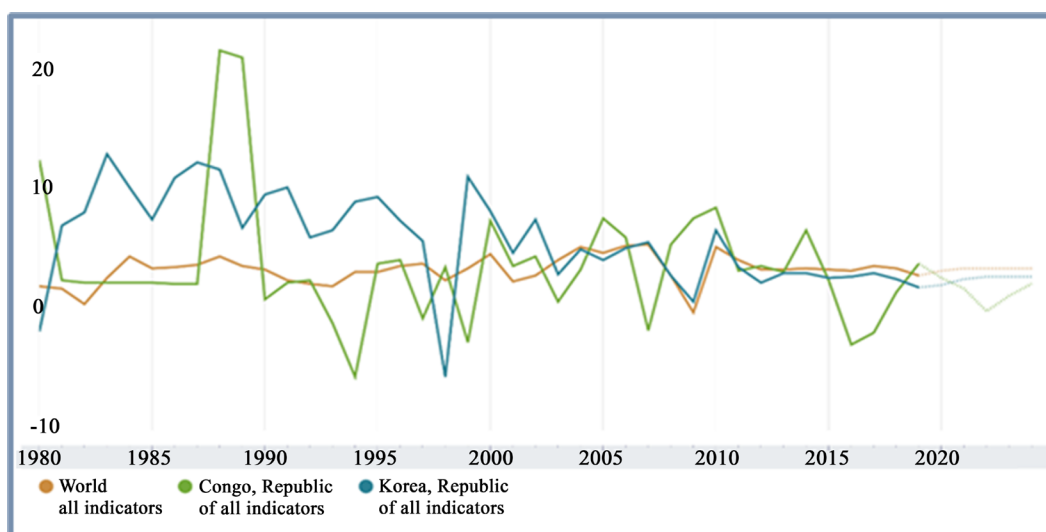


Figure 8. Real GDP Comparison; source: World Economic Outlook (2019).

Table 1. International and domestic regulations and conventions; source: World Bank (2018).

Congolese government departments related to child labour law enforcement	International conventions on artisanal mining in DRC	Congolese regulations and relevant memberships
Ministry of Employment, Labour and Social Welfare	ILO C. 138, Minimum Age	Mining Code 2002
Ministry of Justice and Human Rights	ILO C. 182, Worst Forms of Child Labour	Child Protection Code 2009
Ministry of Interior	UN CRC	Retrieved Mining Code 2018
Ministry of Social Affairs, Solidarity, and Humanitarian Action	Palermo Protocol on Trafficking in Persons	Member of Organization for the Harmonisation of Corporate Law in Africa 2012
Office of the President’s Personal Representative on Sexual Violence and Child Recruitment	Extractive Industries Transparency Initiative	
Ministry of Defence	UN Organization Stabilization Mission in the DRC	

also made efforts to regulate the ASM sector.

The 2002 Mining Code imposed that ASMs are solely allowed in regulated ASM Zones (ZEAs). Yet, the government lacks the capacity needed to enforce this regulation due to political instability and weak institutions, as discussed in Section 3.4.2. In 2014, the Ministry of Labor had only 20 inspectors for all ZEAs in DRC, representing a severe shortcoming (Amnesty International, 2016). Additionally, the ZEAs were too small to cover the mass of artisanal workers available, resulting in the continued prevalence of unregulated mines.

These initiatives are currently ineffective. The number of governmental labour inspectors does not meet the number of inspectors needed for the 31 million Congolese workers. Besides, holding an official mining card and being a member of a demanded mining co-operative are too cost-intensive and bear tax-disad-

vantages. Consequently, since the government is not able to monitor ASM sites, there is little incentive for mining legally (PACT, 2010; IGF, 2018; IPIS, 2019).

3.5. Stakeholder Analysis

To apprehend the dynamics of Samsung's GVC, a thorough analysis of its stakeholders is required as it provides significant insights on their relationships and highlights those in a position to drive change, which is crucial for delivering relevant recommendations (Gereffi & Fernandez-Stark, 2016).

While a general level of analysis leads to industry-generic strategies (Freeman & McVea, 2005), analysing fewer stakeholders is positively linked to the feasibility of the company's recommendations and long-term goals (Ackerman & Eden, 2011). Then, the stakeholder salience needs to be identified to determine which stakeholders must be addressed for Samsung's strategy to succeed, defined here as the DRC government, suppliers, and NGOs (Mitchell et al., 1997).

3.5.1. Government

The DRC government has a crucial role in addressing human rights issues. Its position has a double stake, as addressing human rights issues contributes to social upgrading and attracts foreign direct investment (FDI). In this line, the government implemented the EITI to ensure equal redistribution of mining revenues (EITI, 2020), revised its Mining Code in 2018, and launched national plans designed to address human rights and child labour issues.

The government's influence and efforts should positively impact the Cobalt value chain; however, such commitments lack formal plans of implementation, timelines and assigned responsibilities. Not only this, but there is also an insufficient number of inspectors required to ensure their application (Amnesty International, 2016). In addition, social initiatives such as educational reforms could help tackle human rights issues in the GVC, but none have been undertaken. For example, even though child labour is prohibited, the high cost of attending school explains its recrudescence. MNEs often have the opportunity to discuss and influence host governments' initiatives. In this case, Samsung could collaborate with the DRC to enforce policies and monitor suppliers' activities in terms of ASM and human rights. This could also be helped by joint projects between DRC and SK governments, facilitated by Samsung's c. However, as recent developments in 2019 have shown, the new DRC government also needs to learn how to effectively address the ASM issues.

3.5.2. Suppliers

The core of the issue is linked to Samsung's Tier 1 suppliers. Samsung is increasingly investing in the sustainable competitiveness of its Tier 1 suppliers, while Tier 2 suppliers (ASM) are less regarded (Samsung Electronics, 2017). Because of the relational governance between Glencore, Huayou and Samsung, the latter relies on its suppliers to meet its standards, even though evidence shows that

their implementation and control is not sustainable.

The increasing standards can encourage Tier 1 suppliers to either develop systems to bypass codes of conduct or overlook poor working conditions (Gereffi & Lee, 2012); for example, by hiring irregular workers that increase their competitiveness at a low cost, and that can be easily hidden during audits. Conversely, Tier 1 suppliers have opportunities to develop measures and promote changes such as confronting ASM with security staff, seize their production, offer financial compensations to leave or let them dig under the supplier's control, who then buys the production (Tsurukawa et al., 2011). The latter option is also an opportunity to develop employment contracts and increase workers' social stability.

3.5.3. NGOs

NGOs, through the publication of reports and campaigns, have a crucial role in raising global awareness on the poor human conditions linked to Cobalt mining and the MNEs involved (Amnesty International, 2016). Because the public increasingly pressurises MNEs to develop sustainable supply chains (Lee & Gereffi, 2015), NGOs can exploit reputational risks to promote change (Barrientos, 2013). They adopt divergent strategies such as alliances with companies or adversarial campaigns, in a bid to influence organisational behaviour (Barrientos, 2013).

As it is crucial for Samsung to interact with those stakeholders and maintain their interconnectedness, **Table 2** below summarises Samsung's communication strategy for each of them. To implement future recommendations, Samsung needs to adopt a more proactive and frequent stand to stakeholder interactions.

3.6. Upgrading and Downgrading

GVCs are assessed in terms of upgrading and downgrading impacts in economic,

Table 2. Stakeholder engagement, adapted from: (Samsung, 2020).

	Government	Suppliers	NGOs
Message	<ul style="list-style-type: none"> Economic effects Fair trade Health and safety Compliance 	<ul style="list-style-type: none"> Promote fair trade and shared growth Human rights protection Assess suppliers' impact on society 	<ul style="list-style-type: none"> Social responsibility for local communities and the environment
Media	<ul style="list-style-type: none"> Policy debates and council meetings Participation in policy consultative bodies 	<ul style="list-style-type: none"> Hotline Supplier meeting Shared growth academy 	<ul style="list-style-type: none"> Networking events Open and transparent engagement
Frequency	<ul style="list-style-type: none"> Quarterly meetings Case-by-case basis 	<ul style="list-style-type: none"> Quarterly meetings Continuously through hotline 	<ul style="list-style-type: none"> Continuously
Responsibility	<ul style="list-style-type: none"> Compliance with local policies 	<ul style="list-style-type: none"> Audit to ensure good application of sustainable policies and practices 	<ul style="list-style-type: none"> Commitments to engagements
Feedback methods	<ul style="list-style-type: none"> Meeting with officials, participation and establishment of working groups 	<ul style="list-style-type: none"> Audit Meetings 	<ul style="list-style-type: none"> Reports Joint workshops

environmental, and social areas (Lee & Gereffi, 2015). Economic upgrading implies that firms, countries or regions progress to higher-value activities (Gereffi, 2005), either by improving their process, product, function, or using specific capabilities to enter new industries (Humphrey & Schmitz, 2002). The neoclassical approach assumes an automatic link between economic and social upgrading (Milberg & Winkler, 2011). However, the benefits of being integrated into a GVC are not always equally distributed, and the most impoverished workers are often left out of the GVC's positive socio-economic spillovers (Bolwig et al., 2010). Those benefiting from upgrading are mostly skilled and regular employees, while workers at the end of the chain often suffer precarious contractual arrangements with lower wages and rights, such as artisanal miners (Lee et al., 2013). Because human conditions linked to Cobalt mining have been of international concern, this report focuses on the DRC's social conditions and highlights issues and areas of improvement.

3.6.1. Social Upgrading

Social upgrading, assessed by measurable standards and enabling rights, encompasses improvements in people's economic and social life, such as economic rights, security, wages, and working conditions (Barrientos et al., 2011). Institutionalists posit that an assortment of norms and regulations mediate the relationship between economic and social upgrading (Milberg & Winkler, 2011). Samsung's CSR guidelines, following the UN Sustainable Development Goals, aim to reduce poverty, hunger, guarantee sustainable production, health and wellbeing, and ensure education (Samsung, 2019). DRC also developed policies (Table 1) aimed at improving workers' social conditions.

3.6.2. Social Downgrading

The variables assessed in the following section allow analysis at three levels of aggregation: the country, industry, and firm (Milberg & Winkler, 2011).

Despite the government's attempts to implement national and industry-specific policies, the workers' social situation remains unsatisfactory. Less than 10% of miners are aware of regulations addressing working conditions and safety (Tsurukawa et al., 2011). Similarly, even though the Labour Code guarantees freedom of association, only 0.5% of workers are unionised (ibid.). This results in low-to-zero bargaining power, as mentioned earlier and confirmed by multiple instances of exploitation by the state and corporation (Zeuner, 2018).

Even though 61% of the population above 15 is employed (UNDP, 2019), DRC has one of the highest poverty rates in sub-Saharan Africa (73%) and 87.7% of the working population is classified as working poor (World Bank, 2019). DRC's Human Development Index score has been slowly increasing (0.459; 1.24% annual growth between 2010 and 2018) but remains too low.

At the firm level, Samsung's Suppliers Code of Conduct forbids suppliers to conduct any form of child labour or inhumane treatment (Samsung, 2018). However, the production standards and costs required by Samsung can entice

suppliers to overlook some social aspects of their organisation and develop social downgrading (Barrientos et al., 2011). To comply with standards, suppliers often use regular and irregular workers (Gereffi & Luo, 2015), the latter representing 96.3% of the total employment in DRC's non-agriculture sectors (UNDP, 2019). Those irregular workers (artisanal miners) cost suppliers less resources, are absent from official records and thus, easier to hide from audits. This reveals the need for more comprehensive and in-depth on-site analysis from Samsung.

4. Key Findings

The issues of child labour and social downgrading prevalent within Samsung's value chain have been found to originate from DRC artisanal mines and the poor practices that occur within Tier 2 suppliers.

- The governance structure allows Samsung to exploit close working relationships with Tier 1 suppliers, who need to implement the lead firm's CSR policies. The manner in which those initiatives are implemented with Tier 2 suppliers is largely unregulated by Samsung. Samsung is dependent on tier 1 suppliers to implement its standards on sub-suppliers, which is not sufficiently done.
- Tier 1 suppliers, Glencore and Huayou exploit their market power and follow their economic interest rather than addressing social concerns.
- Even though government regulations could improve the situation, they are not properly enforced, which does not encourage suppliers to regulate their activities.
- NGOs play an essential role in raising global awareness and developing projects which, if supported by Samsung and different stakeholders in the GVC, could enhance social conditions.

5. Recommendations

The exploitation of child labour and wider social downgrading propagated by the artisanal Cobalt industry, as has been shown, is the consequence of various multi-scalar factors. The generation of a sustainable action plan to address social downgrading in both the long- and short-term, will, therefore, require the involvement of multiple stakeholders. Notably, Samsung will be required to leverage its relationship with Tier 1 suppliers, Huayou and Glencore, alongside the Congolese and South Korean governments to address issues that span across multiple governance levels.

Below, this report outlines a series of complementary micro- and macro-level recommendations that are split between the short- and long-term. The proposals have two objectives; 1) prevent social downgrading occurring within the DRC artisanal Cobalt industry in the short term, prioritising the removal of child labour from Samsung's value chain without causing significant poverty increases, and 2) instigate social and economic upgrading through shared value creation initiatives designed to secure a socially responsible value chain over a longer

timeframe.

5.1. Short-Term Recommendations

At present, 60% of households in DRC mining communities are reliant upon mining as their primary sources of income and are highly vulnerable to income fluctuations, so implementing a blanket ban would prove irresponsible (Faber, Krause, & Sanchez, 2017). However, measures should be taken to ensure Cobalt is exclusively sourced from mines audited by Samsung or trusted Tier 1 suppliers.

To facilitate the expulsion of unlawful working conditions and child labour from Samsung's value chain, current voluntary audit procedures should be extended in frequency and rigour. Audits should follow a systematic and documented process through which evidence is obtained and evaluated objectively (Jain, Cui, & Domen, 2016). Additionally, to reduce the risk of unregulated artisanal Cobalt infiltrating the supply chain, a higher degree of transparency must be sought with suppliers in regards to Cobalt origin, defined as the extent to which information is readily available to both counterparts in an exchange and to outside observers (Awaysheh & Klassen, 2010). It is suggested that Samsung pursue this using a twofold method. Primarily, certificates of origin should be requested to address transparency in the immediate future. This low-tech solution is ideally suited for rapid implementation; however, it serves to incentivise misconduct and document falsification, preventing absolute origin legitimacy. Over longer timescales, it is proposed that blockchain technology be implemented to rectify this. This technology has the capability to generate immutable and distributed origin and custody records which lends itself well to traceability applications (Francisco & Swanson, 2018).

5.2. Long-Term Recommendations

Long-term responsible Cobalt procurement will need to address the root causes of poverty and misconduct accountable for driving social downgrading in mining communities. Initiatives centered around shared value creation (Porter & Kramer, 2011) offers Samsung a viable framework to ensure the absence of irresponsible social practice in its value chain while promoting social and economic upgrading opportunities for ASM operations and their associated communities.

At present, Samsung is involved with "Cobalt for Development", a pilot community project, aimed to improve the working conditions in one artisanal Cobalt mine and to develop its local community infrastructure (Samsung, 2019). This report suggests that the scheme is rolled out across more mining districts and that Samsung starts to claim even more personal responsibility. Only the joint efforts of multiple stakeholders, including NGOs, suppliers and the Congolese government, will ensure legitimacy and sustainable long-term success of a social infrastructure project, as alluded to in **Figure 9**. Therefore, it is imperative a collaborative approach is utilised.

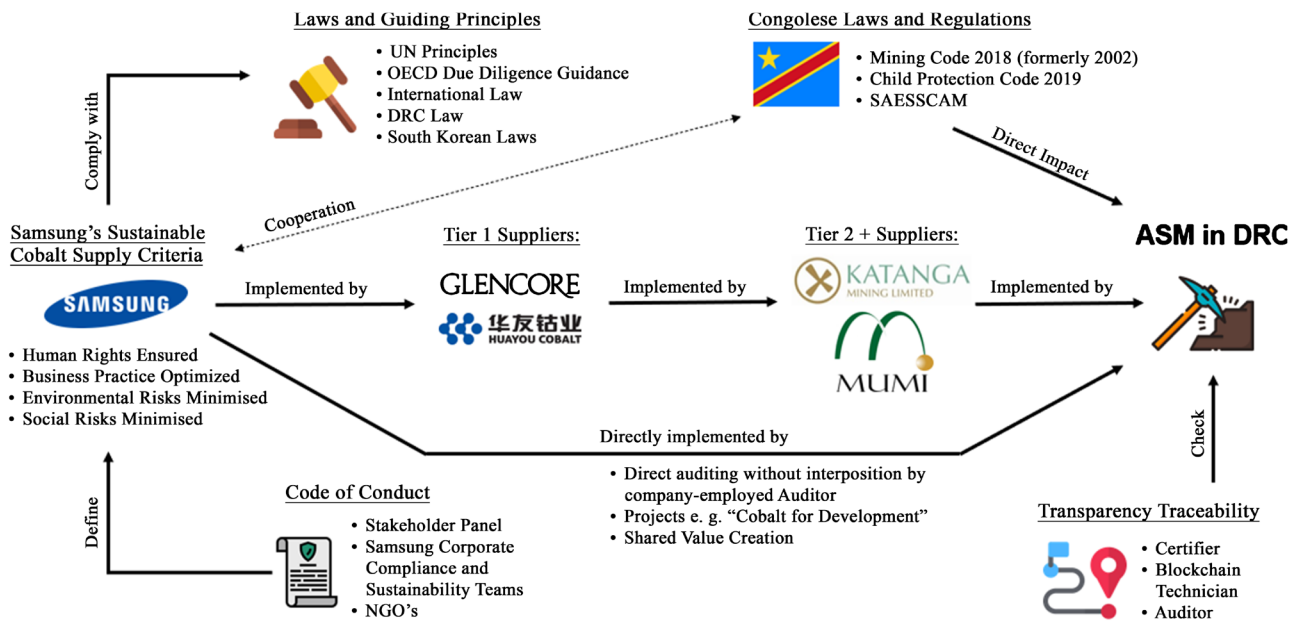


Figure 9. Suggested Long-Term Recommendations Framework, own figure.

Providing access to better quality education, healthcare, sanitation and working conditions through the provision of schools, hospitals, clean water sources and implementation of more efficient and safe production methods, will lower the prevalence of child labour and dangerous working conditions within the mines (Hilson, 2010). This occurs as healthier workers are less beholden to illness, reducing time out of work and thus lowering the need to force children into labour (ibid.). In economic terms, health and education are generally regarded as crucial contributors to a person’s stock of “human capital”. Improvements in one or both of these factors should contribute to a rise in labour force productivity, generating economic benefits to the firm and alleviating the risk of human rights violations occurring within Samsung’s value chain (Laplagne, Glover, & Shomos, 2007). This will be further bolstered through subsequent economic process upgrading, in which the implementation of safer and more advanced mining techniques will generate a higher output while ensuring fewer human rights abuses. Nevertheless, it is recommended that Samsung play a more prominent role in any development due to their financial capacity and their need to engage more fully with Tier 2 suppliers, thus ensuring the absence of human rights abuses in their value chain.

6. Conclusion

Global supply chains, which span various continents, are characterised by a high degree of complexity. legal structures, institutional and cultural frameworks differ significantly from country to country. it is correspondingly intricate to disclose branched supplier structures, as often, as in the cobalt context, a multitude of sub-suppliers are resorted to by samsung’s contractual suppliers.

Therefore, it is rather difficult for companies like Samsung to assess the extent

to which contract mining partners resort to artisanal mining in order to compete in the ever more intense competition for lower prices and higher profits.

In addition, child labour, which accompanies artisanal mining, is also a major yet double-edged issue. From a western perspective, child labour is to be condemned, but at the same time it is often the sole source of income for an entire family in the Congo. The alternative might provide death by starvation or even worse work such as in prostitution.

The author is therefore of the opinion that a simple approach of abolishing artisanal mining and child labour overnight is not possible. Rather, a more sustainable solution and the cooperation of all stakeholders in the Congo on an international scale is needed. A joint initiative encompassing NGOs, Glencore, Huayou and other global players operating in Congo in order to counteract the corrupt political system and generally weak institutional frame.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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