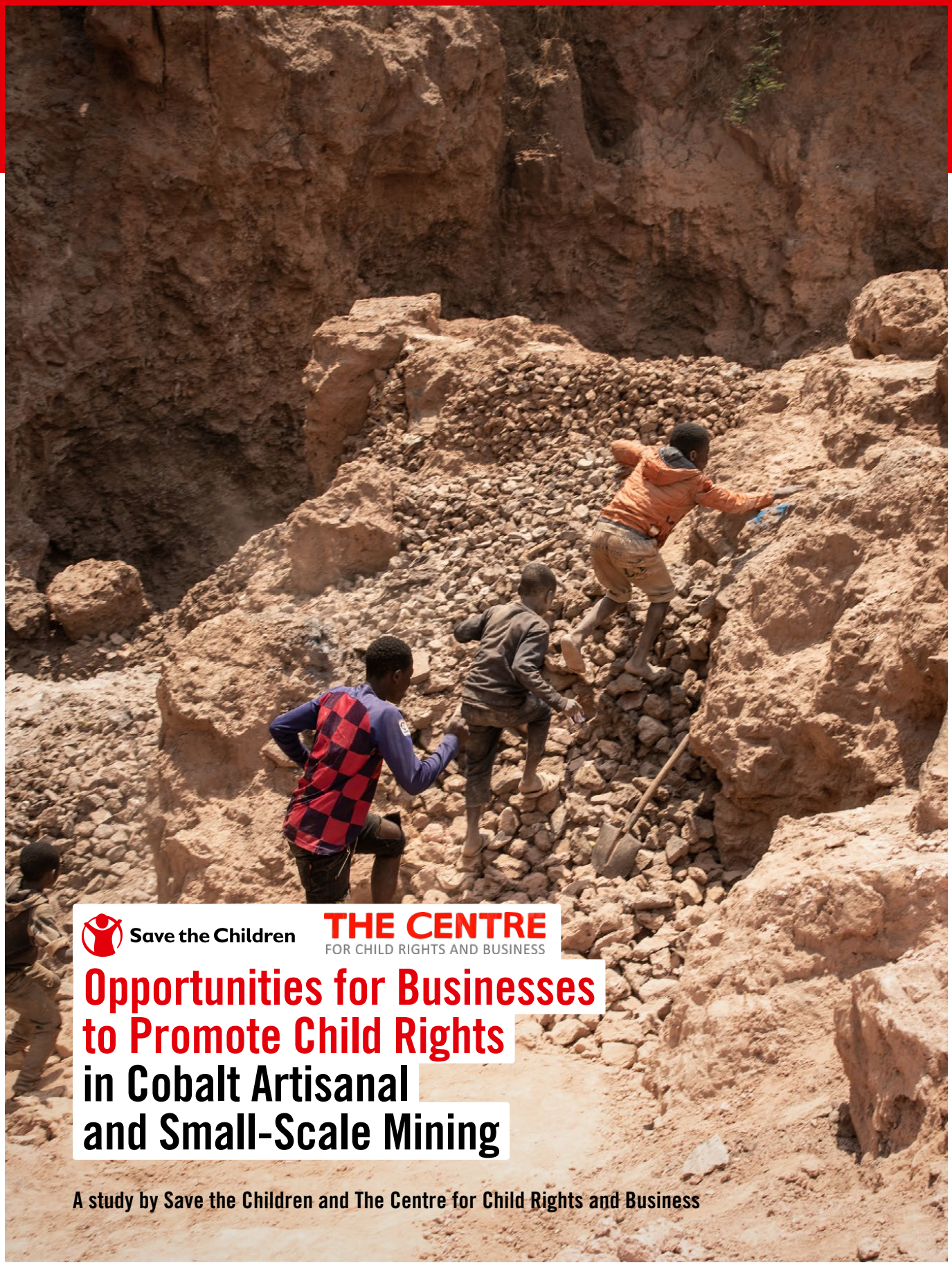

Save the Children

THE CENTRE
FOR CHILD RIGHTS AND BUSINESS

Opportunities for Businesses to Promote Child Rights in Cobalt Artisanal and Small-Scale Mining

A study by Save the Children and The Centre for Child Rights and Business

Acknowledgement

We wish to thank all stakeholders who participated in our study by accepting in-depth interviews and participating in quantitative surveys or workshops including artisanal miners, representatives of ASM cooperatives, community leaders, school principals and children in ASM communities. We are very grateful for BMW, Daimler, Fairphone and Volkswagen for their candid discussions about their cobalt supply chain and relevant policies and practices; and for Pact, Responsible Mineral Initiative (RMI) and The Impact Facility for helping us better understand on-the-ground initiatives.

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Children running in an ASM site in Kolwezi.
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Foreword

Demand for cobalt is increasing significantly as more electric cars and other green energy solutions reach consumers. With this growth, attention has turned to the Democratic Republic of the Congo (DRC), where most of the world's cobalt is produced, of which a third comes from artisanal and small-scale mining (ASM). For more than 200,000 people in the DRC, informal cobalt mining is an essential lifeline. The green energy and mining industry enjoy immense benefits from DRC cobalt, and it is essential this is not happening on the back of the workers, children and entire communities. With projections pointing to a staggering 30% increase in demand for cobalt annually, it is therefore crucial to have a thorough understanding of not only the working conditions in ASM, but of how the ASM industry affects the communities linked to it.

We have known for some time that cobalt mining is linked to various human and labour rights challenges as well as incidents of child labour. In general we can observe that mining in countries with widespread poverty and weak labour standards, creates risks not only for the mine workers, but also for the communities around the mines – most of all, children. Our report confirms the extent to which working conditions and insufficient wages in ASM multiply risks for children and youth that already face the reality of poverty: bad living conditions, insufficient healthcare and education, child labour, violence against children as well as a general lack of decent job opportunities.

It's encouraging to see that there is a growing consensus that rather than eradicating ASM, the focus needs to be on developing an industry-wide standard for responsible cobalt mining, and we hope the information in this study will further drive action towards better conditions in and around ASM. It will be crucial that all those involved – industry partners and stakeholders, the DRC government and civil society organisations – find a common understanding and take proactive, pragmatic steps to improve the situation for communities that depend on artisanal and small-scale mining.

The mining industry alone will not be able to tackle this problem; to develop effective, systemic and sustainable solutions we need strong collaborations with government and CSOs, as well as a thorough understanding of local realities gained through the participation of respective mining communities when designing interventions.

But it is equally important that the scale and complexity of the issues don't lead us to a wait-and-see approach or to political quarrels on where to start. Rather, we all need to live up to our responsibilities and promptly find solutions, never losing sight of what is at stake: the future of hundreds of thousands of children in the DRC's mining communities.

Ines Kaempfer
CEO, The Centre for Child Rights and Business

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CEO, Save the Children Deutschland e.V.

Children take part in a focus group carried out on behalf of Save the Children, intended to understand the scale and scope of child's rights violations in mining communities.
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Executive Summary

Save the Children initiated this study to shed light on the current situation of children in cobalt artisanal and small-scale mining (ASM) communities and the opportunities for companies to improve child rights.

Cobalt is an important mineral for lithium-ion batteries used in electronic devices and electric cars and of strategic importance in pushing the "clean energy revolution". The demand for cobalt is expected to grow four-fold by 2030. Approximately 70% of the world's cobalt is produced in the Democratic Republic of the Congo (DRC), of which 15–30% of the DRC's cobalt supply is produced by ASM (World Economic Forum 2019), which is mostly informal and illegal in nature.

There has been much negative press around ASM in recent years, which is often associated with human rights violations, poor working conditions and the worst forms of child labour.

Initially many cobalt buyers undertook "de-risking" efforts to ensure their supply chains were clear of ASM cobalt. However, the industry has generally come to the consensus that it is nearly impossible to ensure no ASM cobalt enters the more formal supply chains, and that even if their supply chains could be entirely ASM cobalt free, the reputational risk will persist. More importantly, the cobalt ASM sector is crucial to the livelihoods of up to 200,000 artisanal miners and their families (OECD 2019), and therefore, eliminating ASM is not an option in the near future.

As a result, a range of government and corporate-led on-the-ground initiatives have taken off in the past few years to formalise ASM. The process of formalisation, while not yet standardised, is generally driven by a goal to create decent working conditions by improving health and safety, water and sanitation, eliminate child labour, increase productivity and income for artisanal miners, increase traceability and to legitimise the ASM operations. While there is a lack of legally binding regulations at the international level to address human rights issues in cobalt ASM in DRC, the new laws and legislations in Europe such as the likely European Commission Mandatory Human Rights and Environmental Due Diligence (mHREDD) law and Germany's supply chain due diligence act (passed in June 2021), will strengthen the regulatory framework for downstream companies sourcing cobalt from DRC. As a result of these laws, there will be more pressure on companies to demonstrate how they manage human rights and environmental risks in their supply chains. Thus, engaging in formalising ASM and improving child rights will be an opportunity for companies to implement what will be requested under the various due diligence laws.

This study aims to understand how the recent changes and supply chain practices impact child rights risks and how actions of downstream players, such as battery producers, technology and car companies, can function as either risk multipliers or mitigators in relation to child rights. By analysing the implications of recent policies and practices of downstream players and the initial impact of the ASM formalisation efforts on child rights, the study aims to find opportunities to improve children's rights for downstream players by actively and proactively engaging in cobalt ASM in the DRC.

The study was carried out by The Centre for Child Rights and Business (The Centre) and supported by partners such as the Impact Facility, who provided technical support and expertise throughout the study, and local implementing partners IHfRa and CARF[1], who engaged in quantitative and qualitative data collection over the course of two separate field assessments, gathering insights from 207 parent artisanal miners and 209 children through semi-structured interviews and quantitative surveys in Lualaba Province. Qualitative data was derived from in-depth assessments with village chiefs, representatives from ASM cooperatives, school principals and artisanal miners, with further insights gathered during workshops with male and female artisanal miners, school children and out-of-school children. As any study on human rights in cobalt supply chains can have wide-reaching implications for consumer brands, we also sought to gain their perspective, and thus conducted in-depth interviews with BMW, Daimler, Fairphone and Volkswagen, as well as with international NGOs with strong knowledge and ties to the DRC's extractive industry such as Pact and The Impact Facility.

We can summarise our key findings as follows:

- Children in cobalt ASM communities face an education crisis that has been worsening in recent years and has been further aggravated by the income shocks of a cobalt price slump and interrupted and unstable supply chains caused by the COVID-19 pandemic.
- With the increase in school dropouts, child labour in ASM continues to be a common phenomenon.
- School fees are the main obstacle to education and a driver for child labour and unregular school attendance and dropouts.
- Older children in secondary school age often engage in mining work to pay for their education, while the younger children in primary school age are forced to drop out of school.
- Children working in ASM spend long hours at work, and as a result, feel the impact of hazardous work on their health, experiencing frequent pain and discomfort in their bodies as well as small and bigger injuries at work.
- Aware of their desperate state, children in ASM communities, especially those working in ASM, generally have poor psychological health with pervasive negative emotions, and regardless of having dreams about university education, are quite pessimistic about their future career options.
- On top of children struggling to get to school and working in mines, the ASM negatively affect the health and safety of children: they are at an increased risk of accidents given the close proximity of the mines to the busy roads children walk along to fetch water, as well as the air pollution from the mines that puts children at risk of suffering from long-term health issues.

Linking desktop research to our observations and comparing mines in formalisation projects to those who aren't, we draw the following conclusions:

Supply Chain Practices

- Traceability of the cobalt supply chain is improving with leading international brands mapping their supply chains to the smelters/refiner's level according to OECD recommendations.
- Even though disengaging from ASM might reduce the risks for businesses, it will worsen the child rights risks in ASM communities, and thus is not considered a responsible sourcing approach.
- The stigmatisation of ASM by downstream brands and buyers can only discourage large-scale mining (LSM) companies from meaningfully engaging with ASM.
- LSM can play a crucial role in the formalisation efforts to provide technical and machinery support to ASM and increase safety and productivity, and direct relationships between ASM and LSM/refiners can improve traceability.
- Pilot initiatives to formalise the ASM sector can only be sustainable and scaled up if ASM is acknowledged and treated as part of the supply chains of downstream companies.
- Cooperatives play an important role in formalising the ASM sector if they receive the technical and managerial support.
- Formalisation efforts can achieve a real impact on reducing child labour in the mines if supply chain practices are combined with community development initiatives to address poverty.
- Monitoring systems to remove children from the mines can effectively reduce child labour in the sector. But it is only sustainable if children have better access to education, miners increase productivity and income and have more alternative income opportunities.

1 Please refer to Appendix 2 for more information about the study partners.

Recommendations and Next Steps

After analysing the role downstream brands / buyers can play in improving child rights in the cobalt ASM communities in the DRC, the study recommends the following interventions as opportunities to improve children's rights:

1. Engage ASM as part of the supply chain to push for formalisation
2. Set up a functional child labour remediation system as part of ASM formalisation efforts
3. Investment in ASM communities should focus on improving access to education and reduction of school fees
4. ASM formalisation efforts should push economic partnerships between LSM and ASM to improve productivity and safety
5. LSM investment in ASM communities to improve the living conditions (infrastructure) should not only be considered as a philanthropic contribution but to be expected as part of a due diligence process

List of Abbreviations

ASM	Artisanal and Small-Scale Mining
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe (Federal Institute for Geosciences and Natural Resources)
CARF	Centre Arrupe pour la Recherche & Formation
CEGA	Center for Effective Global Action
DRC	Democratic Republic of the Congo
EGC	Entreprise Générale du Cobalt
FCA	Fair Cobalt Alliance
GBA	Global Battery Alliance
GER	Gross Enrolment Ratio
GIZ	Gesellschaft für Internationale Zusammenarbeit
IHfRA	Innovative Hub for Research in Africa
LSM	Large Scale Mining
MoU	Memorandum of Understanding
NGO	Non-Governmental Organisations
OECD	Organisation for Economic Cooperation and Development
OEM	Original equipment manufacturer
PE	Mining License (Permis d'Exploitation)
PRI	Principles for Responsible Investment
RMI	Responsible Minerals Initiative
SAEMAPE	Service d'Assistance et d'Encadrement du Secteur Artisanale et Petite Echelle
TIF	The Impact Facility
ZEA	Artisanal Exploitation Zone (Zone d'Exploitation Artisanale)

Definitions

Artisanal and Small-Scale Mining (ASM)
ASM refers to formal or informal mining operations with predominantly simplified forms of exploration, extraction, processing, and transportation. ASM is less capital intensive and more labour intensive compared to large-scale mining (OECD 2019).

Downstream actors/players
In the cobalt supply chain, it refers to all actors involved in the cobalt trade (metal traders, component producers, battery manufacturer, OEMs, brands) after the fine refiner through to consumer-facing companies (OECD 2016).

Upstream actors/players
In the cobalt supply chain, it refers to all actors involved in the sourcing and extraction of cobalt from mines to the refineries.

Due diligence
Due diligence is an on-going, proactive and reactive process through which companies can identify, prevent, mitigate and account for how they address their actual and potential adverse impacts as an integral part of business decision-making and risk management systems.

Child labour
ILO defines "child labour" as work that "deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development", and which refers to:

a. Children aged 5–11 years (or 12 where consistent with ILO and national laws) in all forms of economic activity
b. Children aged 12–14 years (or 13–15 where consistent with ILO and national laws) in all forms of economic activity except permissible "light" work
c. Children aged 15–17 years in hazardous work. The specific types of employment or work constituting hazardous work are determined by national laws or regulations or by the competent authority. Hazardous work also includes children aged 15–17 working long hours, defined as more than 43 hours per week
d. Children aged 5–14 years performing household chores for at least 21 hours per week

Hazardous child labour
ILO defines hazardous child labour or hazardous work as the work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children. It includes:

- Work which exposes children to physical, psychological or sexual abuse
- Work underground, under water, at dangerous heights or in confined spaces
- Work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads
- Work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging to their health
- Work under particularly difficult conditions such as work for long hours or during the night or work where the child is unreasonably confined to the premises of the employer

Worst forms of child labour
The ILO defines the worst forms of child labour as the work that involves children being enslaved, separated from their families, exposed to serious hazards and illnesses and/or left to fend for themselves on the streets of large cities – often at a very early age. It includes work which is likely to harm the health, safety or morals of children, such as work in a mine, where children risk death or injury from tunnel collapses, accidental explosions or rock falls.

1. Background

1.1 The Importance of Cobalt and Artisanal and Small-Scale Mining (ASM) in the Democratic Republic of Congo (DRC)

Our lives have become increasingly dependent on chargeable battery appliances such as portable electronic devices, energy storage applications and electric cars. With the "clean energy revolution" pushing for more electric mobility, the use of lithium-ion batteries has drastically increased in recent years, and, due to its high energy density and good durability as a cathode material, so has the demand for cobalt (OECD 2019). In fact, the demand for cobalt is expected to increase four-fold by 2030 (The World Economic Forum, 2019). The DRC is the world's leading cobalt producer and has the largest known cobalt reserves, accounting for 60–70 % of the world's cobalt. Cobalt from the DRC is mostly a by-product of copper processing and refining and is concentrated in a region often referred to as the "Copperbelt" in Haut Katanga and Lualaba provinces (OECD 2019).

Between 15–30 % of the DRC's cobalt is produced in ASM sites (BGR 2019). The artisanal mining sector in the DRC is seasonal and cyclical in nature, responding to price changes and weather conditions (World Economic Forum 2019). This makes it difficult to estimate the total number of artisanal miners in cobalt production at any given time. However, it is estimated that between 140,000 and 200,000[2] artisanal miners were working in copper and cobalt production in Lualaba and Haut-Katanga in 2019 (OECD 2019). As such, the cobalt ASM sector is an essential lifeline for thousands of artisanal miners and their families in communities with very few alternative income options.

Box 1: What is artisanal and small-scale mining (ASM)?

ASM refers to formal or informal mining operations with predominantly simplified forms of exploration, extraction, processing, and transportation. ASM is less capital intensive and more labour intensive compared to large-scale mining (OECD 2019).

ASM sites in the DRC are mostly informal and illegal in nature. 87 % of ASM sites are located in the industrial mining concessions, but currently only three mines have an agreement with the concession holders. Concession holders usually do not want to take responsibility for ASM and thus refuse to enter into an agreement / MoU. As a result, ASM sites mostly operate illegally. The illegal and informal nature of ASM makes it difficult for businesses to directly engage with the mines and improve the working conditions (BGR 2021)[3].

1.2 The Complexity of the Cobalt Supply Chain

Figure 1 illustrates the cobalt supply chain from mines in the DRC to consumer brands, grouping them as upstream (mines, traders, refiners) and downstream (metal traders, producers, manufacturers and consumer brands) actors based on OECD definitions. According to the OECD, a significant number of LSM operators, processors and refiners also source from ASM, which may be blended with LSM material at various points of the supply chains (OECD 2019), and flow into the materials and components of the downstream companies.

2 The latest estimates provided by the BGR report in 2021 speculated that the ASM sector shrank significantly since 2019 due to the price slump in 2019 and the COVID-19 pandemic. The latest mapping exercise by BGR covered 67 ASM and they estimate that about 31,000 artisanal miners were working in these mines in 2020. This is not a comprehensive assessment of all ASM, and BGR estimates that the total number of artisanal miners is much bigger (BGR 2021).

3 The reasons behind the difficulty in obtaining legal status of most ASM mines are explained further in the Impact Facility report "Digging for Change" (2020) and the BGR report "Mining Conditions and Trading Networks in Artisanal Copper-Cobalt Supply Chains in the Democratic Republic of the Congo" (2021).

The mapping exercise of the ASM sector by BGR also confirmed that all 14 cobalt refiners / smelters in the DRC purchase artisanal raw materials and partly blend them with their cobalt production from industrial mining (BGR 2021).

1.3 Due Diligence in the Cobalt Supply Chain

Major technology and car companies have been facing serious criticism because of ASM cobalt in their supply chains and its connection with human rights abuses. Reports from media and NGOs such as the Amnesty International study "This is What We Die For", exposed the highly precarious working conditions in the ASM sector, which included miners working in dangerously deep and poorly ventilated shafts with no protective equipment, risking injuries and even death; and the presence of the worst forms of child labour, where children as young as 7 years of age work up to 12 hours a day, carrying heavy sacks of mineral ores weighing 20–40 kg, and even being beaten by the private security hired by the industrial concessions (Amnesty International 2016).

Transparency and traceability in the cobalt supply chain has been a challenge with the downstream consumer brands/buyers typically being several tiers removed from the "control point" in the supply chain (representing "fine refiners" in Figure 1). Reflecting this, an Amnesty International report in 2017 found very few downstream companies taking steps to meet even the most basic due diligence requirements (Amnesty International 2017).

According to the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (Box 2), only upstream players are expected to map and trace their supply chain to the point of extraction while the downstream players' traceability extends only as far as the fine refiners. However, downstream actors are responsible for reviewing the due diligence process of the smelters/refiners (OECD 2016). In other words, while downstream actors (e. g. consumer brands) do not have to trace their materials all the way down to the mines, they have to ensure that their smelters or refiners are tracing the mineral to where it has been extracted.

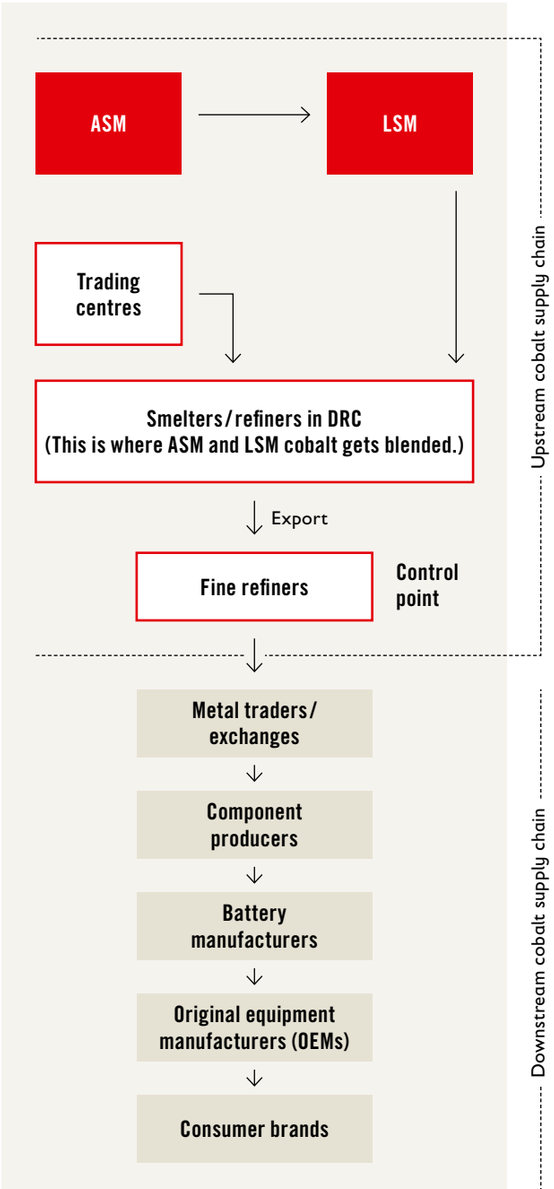

Figure 1: *Cobalt supply chain from the DRC*

Box 2: Upstream & Downstream Players' Responsibility According to OECD

Upstream

- From mine to fine refiner (control point).
- Responsible for the source of the mineral back to the point of extraction, mapping the circumstances of its extraction, trade, handling and export (OECD 2016).

Downstream

- All actors (metal traders, component producers, battery manufacturer, OEMs, brands) after the fine refiner through to consumer-facing companies.
- Responsible for reviewing the due diligence process of the smelters/refiners in their supply chain and assess whether they adhere to due diligence measures put forward in the OECD Guidance (OECD 2016).

Box 3: OECD Five-Step Framework for Risk-Based Due Diligence in the Mineral Supply Chain (OECD 2016)

1. Establish strong company management systems.
2. Identify and assess risk in the supply chain.
3. Design and implement a strategy to respond to identified risks.
4. Carry out independent third-party audit of supply chain due diligence at identified points in the supply chain.
5. Report on supply chain due diligence.

1.4 Downstream Reaction: Engage or Disengage?

For the electric car and technology companies behind the "clean energy revolution", being associated with human rights abuses and hazardous child labour created major reputational damage. This pushed companies to "clean up" their supply chains and improve traceability and transparency.

In the past few years, many consumer brands have begun the arduous task of mapping their very complicated cobalt supply chains. Some have managed to identify and disclose their smelters and refiners[4], while others have even mapped their supply chain down to the mines. Audits are carried out both at refineries in the DRC (so-called crude refiners producing intermediate products) and internationally at refineries producing cobalt chemicals or metal (BGR 2021). For example, in 2018, the Responsible Minerals Initiative (RMI) and the Responsible Cobalt Initiative (RCI) collaborated on a joint project to implement a cobalt refiner assessment programme with clear supply chain due diligence standards, which now sees more than 30 cobalt refiners taking part in the Responsible Minerals Assurance Process (RMAP) of the RMI and undergo an independent third-party audit (PRI 2021). While these traceability and transparency practices are very important for assessing due diligence risks, a major focus has been on reducing the reputational risks to the business by ensuring that there is no ASM cobalt in their supply chain, rather than reducing the actual human and child rights risks in the ASM sector.

4 For example, Apple, BMW, Daimler, Fairphone, Samsung Electronics, Volkswagen etc. and many other members of the Responsible Minerals Initiative (RMI) http://www.responsiblemineralsinitiative.org/about/members-and-collaborations/

So far very few downstream players (if any) actively engage ASM as part of their supply chain. Even though some downstream players are investing in selected ASM sites to develop formalised ASM that can meet international standards, they have been approaching the issues from a "Corporate Social Responsibility" (CSR) and philanthropy perspective instead of strategically engaging ASM as part of their supply chain.

As eliminating ASM is currently not an option since the livelihoods of thousands of families rely on the income from artisanal mining activities, the only option to improve the human rights and child rights situations of the ASM sector is by actively engaging the sector. It has also become clear that the upstream actors of the cobalt supply chains in the DRC cannot improve the ASM working conditions and solve the current human/child rights issues without support from the downstream brands/buyers.

The possible implications of disengagement as a risk multiplier for child rights/labour will be discussed in Chapter 3.

View of an illegal cobalt mining site, Kawama, Kolwezi.
© Hugh Kinsella Cunningham / Save the Children

1.5 Corporate-Led ASM Formalisation Efforts

Along with the efforts to improve traceability in the cobalt supply chain, some downstream and upstream players took the initiatives to create "model mines" to pilot formalisation projects in the ASM sector. Partnerships were created among downstream and upstream actors, the local government and NGOs to improve the working conditions and eliminate child labour in the project mines. The degrees of formalisation efforts in the "model mines" vary significantly and the standards for formalisation are not widely accepted in the industry (Box 4). While most projects are still ongoing, they will provide important learnings both on what works and what doesn't for future formalisation efforts, such as the establishment of EGC[5]. The details of the formalisation efforts including the roles of the cooperatives and the initial impact of and best practices within the formalisation efforts will be discussed in Chapter 3.

Box 4: "Model mines" with formalisation efforts

Mutoshi Project[6]	CDM Kasulo	CDM Kamilombe
Initiated in 2018 and officially concluded in 2020, the Mutoshi Project was a multi-stakeholder partnership between Trafigura (commodity trading company), Chemaf (mining company), Comiakol (ASM cooperative) and Pact (International NGO), and was a commercial sourcing agreement between Chemaf and Comiakol Artisanal miners received productivity enhancing services such as stripping, geological information and transportation, and also received training on working methods and safety, protective equipment and improved water and sanitation conditions (Silva 2019).	CDM Kasulo was a residential area turned ASM, later turned into a designated area for artisanal mining (ZEA) by the government. Kasulo site is a partnership between the provincial government, the ASM cooperatives and CDM (refiner), a direct subsidiary of Huayou Cobalt in DRC. Since September 2017, CDM has collaborated with local authorities to improve conditions in the Kasulo mining area. CDM invested in infrastructure such as a 10ft wall, a health clinic, clean water, toilets and depots for storing and trading the ores. CDM also has a direct traceable buying practice (TIF 2020).	CDM Kamilombe is an ASM in the mining concession (PE) of the state-owned mining company Gecamines. It is a partnership between the concession holder (Gecamines), the cooperative (CDMS) and CDM (refiner), a direct subsidiary of Huayou Cobalt in DRC. The CDM investment in the mining site is relatively new compared to Kasulo. CDM invested in trenches around the mining site, depots for storing and trading the ores, a simple health clinic but not in drinking water. CDM also has a direct traceable buying practice (TIF 2020).

5 In light of government efforts to formalise the ASM sector, the Entreprise Générale du Cobalt (EGC), a subsidiary of Gécamines, was launched in 2020. According to a decree of the Congolese government, it is to be the sole buyer of artisanal cobalt production and thus assume a monopoly position. EGC will lead the formalisation process of ASM in partnership with Trafigura, a Swiss-based commodity training company and the NGO Pact. See more in Appendix 3.

6 For more information about the Mutoshi Project, please refer to the brochure by Pact at https://www.pactworld.org/mutoshi

Children present their collaborative work in front of a group in a focus group activity organised as part of the study.
© Hugh Kinsella Cunningham / Save the Children

1.6 Why a Child Rights Assessment?

With this background in mind, Save the Children together with The Centre for Child Rights and Business initiated this study to provide a comprehensive understanding of the current situation of children in the ASM communities. The objective was to identify opportunities for producers, buyers and other downstream players sourcing cobalt to improve conditions for children affected by DRC's cobalt mining sector. To achieve this goal, a preliminary quantitative assessment took place. This was followed by a second field assessment consisting of quantitative surveys, in-depth interviews and participatory workshops. We also conducted in-depth interviews with village chiefs, representatives of the ASM cooperatives, school principals and artisanal miners as well as workshops for male and female artisanal mine workers, school children and out-of-school children. Further in-depth online interviews were carried out with consumer brands such as BMW, Daimler, Fairphone, Volkswagen; international NGOs such as the Impact Facility and Pact and industry association RMI (Responsible Minerals Initiative). All of this data feeds into this study's analysis of supply chain practices as well as recent policies and practices of downstream players (Chapter 3) through a child rights lens, and finally to a set of recommendations and suggestions on how the downstream actors can contribute towards the protection of children in cobalt ASM communities[7].

7 A more detailed description on the research methods can be found in Appendix 1.

School children work on an exercise during a focus group activity organized as part of the study.
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2. The Situation of Children in ASM Communities

In this chapter, we share our findings on the general situation of children in cobalt ASM communities, with a focus on children of artisanal miners and child labour in ASM. The chapter mainly draws on our surveys, interviews and workshops during the second field assessment in a total of five mining communities in the province of Lualaba. Our sample includes 150 artisanal miners having an average of 4.1 children under the age of 18, and an additional survey with 150 children who are either artisanal miners themselves or have parents working in the mines. We discuss the education crisis that is affecting the ASM communities, which has been aggravated since the cobalt price slump in 2019 and by the COVID-19 pandemic since 2020. We also present recent trends in school enrolment and child labour in the ASM and how they are intertwined; the driving factors behind the worsening education crisis that is exacerbating the child labour situation. This chapter also spotlights the general situation of children working in the ASM sector and the impact on their physical and psychological development. Lastly, we outline the living conditions of children in ASM communities that are affected by the mining activities.

2.1 The Education Crisis

2.1.1 School Enrolment Rates and Trends

Primary school-aged children of ASM miners have a low school enrolment rate of 64 %, which is even lower than the current 73 % enrolment rate of secondary school-aged children.

The ASM miners we talked to have a total of 441 children aged 6–17 years. Based on our survey, 68 % of them are currently in school, meaning that nearly one third of the school-aged children of artisanal miners currently do not attend school.

Breaking down school attendance by gender and age, we can see a similar trend for children of all age groups and genders. Amongst the primary school-aged children in the 6- to 11-year bracket, 64 % are currently enrolled in school (Chart 1). This number is much lower than the Gross Enrolment Ratio (GER)[8] for primary education[9] in DRC at 118.5 %[10].

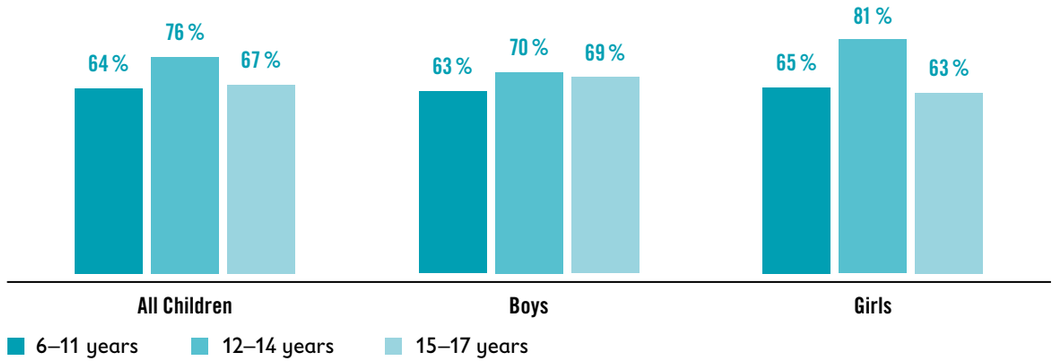

Chart 1: *School enrolment rates of children by age groups and gender*[11]

8 UNESCO: Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown.

9 According to UNICEF, “though there are varying standards, primary education is typically designed for children 6 to 11 years of age. Secondary education typically covers ages 12 to 17.” https://data.unicef.org/topic/education/primary-education/

10 Data extracted on 20 Jul 2021 23:38 UTC (GMT) from UIS.Stat

11 Data is from a quantitative survey with 150 of ASM parents who have 441 children aged 6–17.

What we found puzzling is that fewer primary school-aged children are going to school compared to secondary school-aged children. Our survey shows that children aged 12–14 are 19% more likely to go to school than children aged 6–11. This difference is even more striking amongst girls, with girls aged 12–14 25% more likely to go to school than those aged 6–11. This counter-intuitive finding that more children in younger age groups are out of school can only be explained by two possible assumptions: One is that children start school late, meaning that we might have many younger children in our sample that are not enrolled in school yet (possibly impacted by school closures due to the COVID-19 pandemic); and the other explanation is that primary school children have recently been dropping out with higher frequency (which would likely lead to a lower enrolment rate for older children in the future, as it is unlikely that children go back to school once they have dropped out for longer periods).

The data indicates that both those assumptions are possibly true. Children are indeed starting school late. 62% of children under the age of 9 have not started school yet. Furthermore, 75% of the school dropouts happened in the past two years, indicating a possible increase in school dropouts in recent years. Among the primary school aged children, nearly all dropouts (91%) occurred in the past two years, whereas this was only the case for 61% of the secondary school-aged children. This finding supports the possibility that younger children have been more at risk of dropping out of school in recent years. We can also conclude that this recent wave of dropouts does affect girls as much as boys, increasing the gap between middle school enrolment and primary enrolment. In other words, while more girls are enrolled in middle school, during the last two years girls have been dropping out of school at the same rate as boys in both primary and secondary schools.

This possible trend coincides with the price slump of cobalt in 2019[12] and the COVID-19 pandemic since 2020, when the ASM families highly dependent on the income from cobalt experienced shocks to their family income and struggled to pay for basic necessities such as school fees.

2.1.2 Obstacles to Education and Vulnerability Factors

a. School-related Costs

School related costs are the number one obstacle to education, leading to dropouts and absenteeism.

According to UNICEF, most direct and indirect expenses related to schooling are borne by the parents[13]. What we found in our study is in line with many other major reports that "school fees account for the most often given reason for being out-of-school" (World Bank 2015). In the survey with mining parents, the majority (55%) felt reluctant to give a particular reason for why their children left school, while the rest pointed out the difficulty to afford school fees and related costs[14] (19%) as well as the poor quality of education (19%). Their children, however, were more open. The vast majority of the out-of-school children stated that they left school because their families could not afford school-related costs (87%). In-depth interviews with school headmasters from both public and private primary and secondary schools confirmed this correlation. While some schools try to keep students by allowing parents to pay a down payment and the rest in instalments, most are strict with delayed payments and send students back home if parents do not pay on time.

> "Le Petit Poisson is the cheapest school in this community: 17,000 FC (8.5 USD) per month and 10,000 FC at registration just to give children the opportunity to come and study. The majority of parents are diggers, so we accept negotiations. We agree that they pay the down payments according to their income as long as they pay all the costs in the end."
> *– School principal of a private primary school*

12 "Cobalt prices hit the highest in 2018 then quickly plummeted in 2019 to less than 1/3 of the price in 2018". The Africa Report, 2020. DRC: COVID-19 and cobalt crash make a one-two punch

13 UNICEF, https://www.unicef.org/drcongo/en/what-we-do/education

14 The mining parents in rural and very informal mining sites were more open about sharing that the only reason for their children to leave school was that they couldn't afford the tuition and related costs.

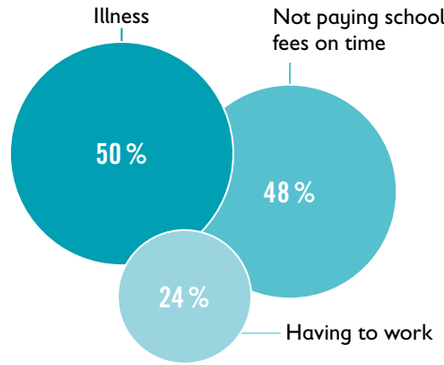

Chart 2: *Top reasons for missing school in the past two weeks*[15]

> "I like the way the teachers give lessons but what I do not like is that at the end of every month, we are asked to bring the 500fc sanitation fee, but when we go back to school, we will find the waste everywhere and dust on the benches."
> *– From the workshop with school children*

Nearly half (49%) of students stated that they had missed at least one day of school in the past two weeks[15], and for nearly half of those students (48%)[16], "not paying school fees on time" was the reason, no matter if the child goes to a private or public/state school.

The pressure to pay school-related costs might be driving younger children to drop out of school and older children to engage in dangerous mining activities.

There is a strong positive correlation between school-related costs and the school levels (primary, lower secondary and higher secondary)[18], meaning the burden on families increases with children entering secondary education, hence the GER for secondary education in the DRC is only 46.2%. However, as we discussed above, we observed higher school enrolment rates among children of secondary school age (12–17) in children working in cobalt ASM. This may be explained by the fact that older children tend to try to combine work and school when their families cannot afford school fees due to income shocks, and indeed 90% of these children are working to pay for their education.

However, we can see that it's not easy for older children in secondary school to combine work and school and this is especially evident among children working in ASM: we found that 24% of these children missed school in the past two weeks because of work (Chart 2).

Furthermore, the data shows that more than one third (36%) of the children who are working (no matter where) are also attending school. However, looking at only the children working in ASM, only about one fourth (¼) are still in school. The long working hours and the physical strain of working in ASM (as we will introduce more in section 2.2.) is the likely reason for children in mines to be less able to combine school and work.

For children who no longer attend school, the majority (51%) started to work right after leaving school, 16% were already working for at least a year by the time they left school, and 33% didn't work for at least a year after leaving school. From the data we have, we cannot conclude whether working will lead to dropping out of school or help children stay in school longer. However, from the trends in the past two years, we can say that working is the coping mechanism of ASM families and children when the families are in financial distress: the older children working to contrib-

15 Data is from the quantitative survey with 150 of children in ASM families, 86 observations. Semi-structured interviews with 59 children found that 94% of students missed school at least once in the past one month. The question referred to days missed "in the past 2 weeks" specifically. Several answers were possible.

16 Note that this is for students who missed school in the past two weeks and could possibly be higher if it coincides with the period to pay for school tuitions.

17 Data is from a quantitative survey with 150 children in ASM families, 42 observations.

18 The correlation is r = 0.3341, sig = 0.0032

ute to family income might in turn stay in school longer if the additional income is enough to pay their school costs. While in different contexts it may not be a bad thing for children in working age (see "Definitions") to work part-time to contribute to their schooling costs, it clearly is a different story for children working in ASM, as their mining activities take place in dangerous conditions, risking their health and safety, as a price for education.

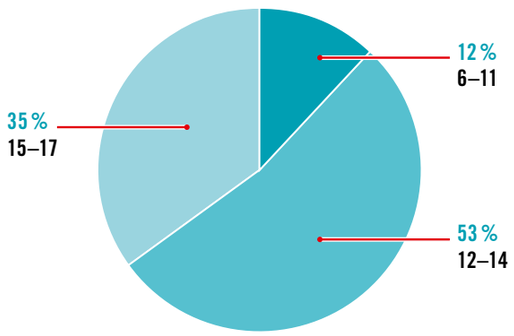

Chart 3: *School children who are working by age groups*[20]

b. The COVID-19 Pandemic

Highest dropout rates occurred in the past one year both for primary and secondary education, indicating that the COVID-19 pandemic has had a significant negative impact on access to education.

DRC government implemented temporary school closure measures from March to October 2020 as part of its efforts to contain COVID-19, depriving over 27 million children of access to education. Only after two months after schools were reopened, they were closed again in response to a second wave of the outbreak. The government reopened schools In February 2021.

According to the recent study by SOCIAL SCIENCES ANALYTICS CELL (CASS), a general decline in school attendance was identified after the initial reopening in October 2020, and the main explanation was a reduction in household income and parents' inability to pay school fees. (CASS 2021).

> "All the Chinese who buy the products from us no longer came to the site. Some returned home to China, so we no longer knew where to sell our products. Parents were no longer able to provide for their children, feed them and take care of them when they were sick."
> *– From an in-depth interview with the representative of a cooperative in Kasulo*

The ASM miners are typically low-income families highly dependent on income from mining. When the COVID-19 pandemic interrupted the cobalt supply chain, families' vulnerability to such an external shock became apparent. The interruptions at mines, lockdown measures and the absence of traders (which forced miners/cooperatives to stockpile the ores, hence slowing the cash flow) meant that many families were unable to pay their children's school fees. Among the 32 % of primary school-aged children who are not in school, 62 % either left school or delayed school enrolment in the past one year[20], reflecting the high negative impact of COVID-19 pandemic on access to education. The same is true for secondary school children, as 51 % of the dropouts happened in the past one year alone.

Even when artisanal miners went back to work after the lockdown, most buyers of the ores were not there, so they couldn't easily sell the ores. When families began to struggle to feed their children, paying for school fees became almost impossible for many families.

19 Data is from a quantitative survey with 150 ASM parents who have 34 children that are currently in school and working at the same time.

20 When we talked to the children in rural and very informal mining communities in the first phase of the study, we also found that more than half (52 %) of dropouts happened in 2020 or 2021, which is consistent with the results from the quantitative surveys in urban mining sites in phase 2.

> "Things got complicated during lockdown. Mom no longer went to the mine, so we didn't have the money to pay for school fees, and they sent me back. I couldn't go to school anymore."
> *– From the workshop with out-of-school children*

c. Academic Environment

The environment in schools and homes provides very little support to children in education.

The majority of the children (57%) don't receive any support with their schoolwork at home. Those who do, receive support mostly from their siblings (14%) and their father (13 %) but rarely from their mother (3 %).

At the workshop with school children, many complained about not having stable electricity at home. The school facilities are very limited in these communities and there is no room available for children to stay after classes and do their homework.

d. Family Size

Children in larger families are more likely to drop out of school.

The mining families have an average of 4.1 children under the age of 18. The study found that there is a significant positive correlation[21] between the size of the families and the likelihood of school-aged children (aged 6–17) being out of school, meaning, the more children families have under the age of 18, the more likely the children are to be out of school.

Children participate in the focus group.
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21 The correlation is r = 0.3572, sig = 0.0000

2.2 Working Children

In this section, we will introduce child labour trends in ASM communities in recent years, the main drivers of child labour, the situation of children working in ASM, and the risk of more children engaging in mining activities due to the income fluctuations of mining families in extreme poverty.

2.2.1 The Trend of Child Labour

The percentage of children working in ASM communities, especially the portion working in mining, seems to be on the rise in recent years and especially since the COVID-19 pandemic.

The 2017 CEGA study stated that "households in the mining communities of the copper cobalt belt are likely vulnerable to income fluctuations", and that most families are subject to extreme poverty, which in turn is a root cause of child labour (CEGA 2017). The vulnerabilities of ASM families were put to the test when the cobalt prices rapidly decreased in 2019 (The Africa Report 2020) and subsequently the cobalt supply chain was interrupted by the COVID-19 pandemic. As a result, an increase in child labour is to be expected, even more so given the increase in school dropouts in recent years as school enrolment rates are usually a good predictor of child labour.

72% of working children aged 15–17 in ASM communities work as artisanal miners, implying a scarcity of alternative employment opportunities for youth.

According to the 2017 CEGA study "11% of children between the ages of 3–17[22] in the mining communities of the copper cobalt belt work outside the household." Of the working children "23% work in the mining sector," (CEGA 2017). Fast forward four years, when we talked to 150 ASM miners in June 2021 around the main ASM hotspots near Kolwezi where various degrees of formalisation efforts are taking place, we found that 17.5% of the 441 children over the age of 5 are currently working, and 42% of the working children are working in ASM. It is worth noting that these percentages alone might give the impression that the child labour rates (and the portion of children working in ASM) are relatively low. However, this could be misleading. As shown in Chart 4, while the percentage of children working is quite low for 6–11-year-olds (6%), it drastically increases for 12–14-year-olds (24%) and even more for 15–17-year-olds (42%). The same is true for the children working in ASM: though it is quite rare for children under 12 to engage in mining activities, 10% of children aged 12–14 and 19% of children aged 15–17 are working in ASM[23] (Chart 5)[24].

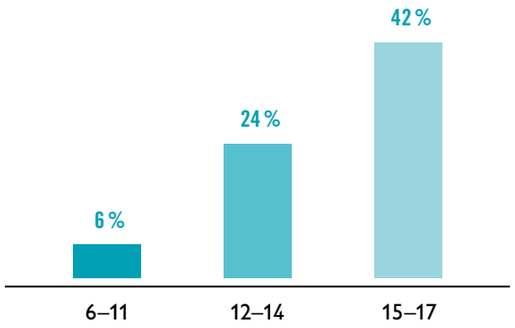


Chart 4: *Percentage of working children by age groups*

22 For our study, we chose the age group of 6–17 years old for calculating child labour rates, which is different from the CEGA report of 3–17 years old. However, even when comparing the age group of 3–17-year-olds, the percentage of working children is 14% in our study, and the percentage working in ASM is 42% among the working children aged 3–17, which are still significantly higher rates than the CEGA report.

23 Apart from the mining activities, children in ASM communities mostly engage in informal work such as selling food, drinks and other random items, not only on the streets and markets, but also often at the mining sites.

24 The CEGA study found that children working in ASM are more likely to be boys than girls. However, according to our data, even though slightly more boys than girls are engaging in mining activity, the difference is not statistically significant.

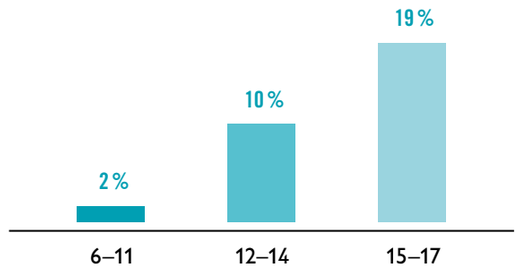


Chart 5: *Percentage of children working in ASM by age groups*

These results already imply that child labour, especially the percentage of children working in ASM, could be on the rise since the CEGA study in 2017, but if we look at how long children have been working, the results further indicate the increase of child labour in recent years, as 65% of working children only started to work in the past two years and 40% in the past one year alone. As for the children who currently work in ASM, 56% started to work in the past two years and 31% in the past one year alone. This finding confirms our assumption above that with the increase in school dropouts in the past two years, child labour rates in ASM communities are also increasing.

65% of working children only started to work in the past two years and 40% in the past one year alone.

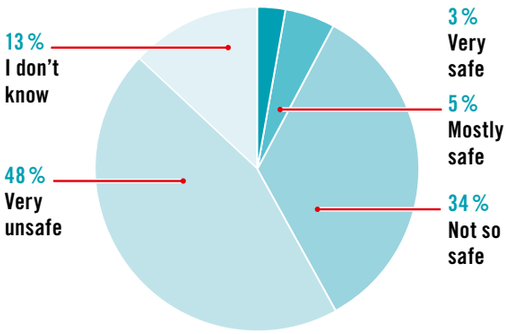


Chart 6: *How safe do you think it is for your children to work at the mine / quarry?*[26]

2.2.2 Reasons for Children Working in ASM

School costs are one of the key drivers of child labour in ASM communities, as 44% of children work in ASM to pay school fees for both themselves and their siblings.

The study results are in line with many reports including the CEGA report that have established poverty as the root cause of child labour in cobalt ASM communities. All parents we talked to pointed out the lack of financial means as the main reason for their children to work in ASM. Interviews with children also confirmed this point as 46% of children working in ASM said their families could not survive without their income. 90% of children working in ASM give some of their income to their families – the majority (51%) give about half of their income to their families after meeting their own personal needs.

Apart from helping their families survive, children mainly work in ASM to pay school fees for both themselves and their siblings (44%). Even though some children have other reasons such as "being financially independent from their families" and "to be more respected among their peers", very few (12% and 10% respectively) cite these as stand-alone reasons for working. Not a single child working in ASM said they worked because they felt they were old enough.

Children working in ASM do so mostly as a coping mechanism due to poverty rather than as a result of cultural norms or lack of awareness.

As for the parents of children working in ASM, 78% openly expressed that they do not like to see their children working in ASM but felt like they did not have any better alternatives. Parents and children generally were all aware of the risks of working in ASM. Most parents whose children work in ASM often worry about the safety of their children, and only 8% think that it is safe for their children to work in ASM (Chart 6). 89% of mining parents believe the minimum age for someone to work in a mine should be at least 18 years old.

These findings are not quite in line with the CEGA study, which identified social norms as one of the root causes of child labour in the mining communities, where "25% of households report that children work outside the household to give a good public impression of the household" (CEGA 2017).

2.2.3 Situation of Children Working in ASM

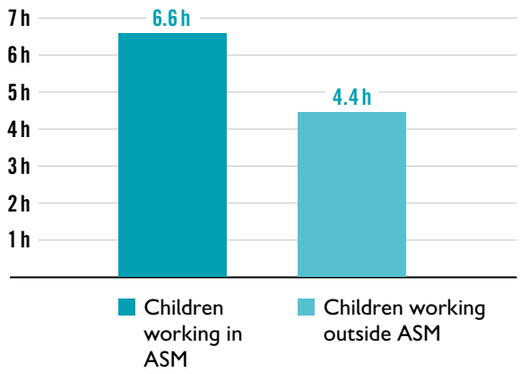
In this section, we share the findings about the situation specifically of those children working in ASM. Our data is based on interviews with 150 children in ASM communities, of which 41 children (27%) are working as artisanal miners. Where suitable, we will compare the results with other working children who are not working in ASM but have parents who are, to understand the different situations of children working in ASM (28 children). We also introduce the working hours of children working in ASM, the impact of mining on their health and safety, psychological wellbeing and plans for their future.

a. Working Hours

While about half (51%) of the children working in ASM work five days or less in a week, the rest work six days a week. Children working in ASM typically work a minimum of four hours per day, and an average of 6 hours per day. Children who work in ASM work significantly more than other working children[26]. The children who are out-of-school also work significantly more than school children[27] (6.6 hours vs. 4.2 hours on average). Among children working in ASM, out-of-school children work an average of 7 hours per day, while the school children work 5.6 hours on average. Working hours of all school children change significantly during the weekends and holidays when they work more than usual, up to eight hours per day.

View of a mining site, Kolwezi.
© Hugh Kinsella Cunningham / Save the Children

Working hours of children



25 Data is from a quantitative survey with 150 ASM parents, 38 observations.
26 The correlation is r = 0.4328, sig = 0.0003. The difference is about 2 hours.
27 The correlation is r = -0.4701, sig = 0.0001

b. Health and Safety at Work

The majority (52%) of children working in ASM feel regular pain or discomfort in their bodies after work, much more than other working children (18%).

Injuries at work are very common among children working in ASM, as the majority (51%) experienced small and bigger injuries while working in ASM.

The ILO considers mining and quarrying as hazardous work, and children working in mines one of the worst forms of child labour (ILO 2019). The poor working conditions at the ASM mines are bound to have a detrimental impact on the health and wellbeing of children. This negative impact becomes apparent when we look at the frequency with which children working in ASM reported feeling pain or discomfort after work compared with other working children. As shown in Chart 7, the majority (52%) of children working in ASM feel regular pain or discomfort in their bodies, some even daily (32%), in contrast to only 18% of other working children. Among the children working in ASM, boys experience such pain and discomfort significantly more than the girls[28], coinciding with the fact that boys tend to engage in more physical and dangerous activities in the mines such as digging and lifting bags of ores.

Hazardous working conditions undoubtedly lead to frequent injuries at work. 51% of children working in ASM have had injuries at work, 80% of which are minor injuries that did not require a trip to the hospital or clinic, such as scratches and small wounds, while the other 20% were bigger injuries that needed medical attention (such as fractures), with a recovery time from 2 days to 2 months before the children could return to work.

"I go to the mine up to three times a week. I often work to meet my personal needs such as buy a pair of shoes etc. I feel obligated to earn money for myself. My job is to lift bags of ores down from the mountain. It's a job that poses huge problems for my health because, if you lift too much, sometimes you get a sore back. I got hurt when lifting the bag. I slipped and fell, but I did not get treated in hospital. With the money I earn, I also help with the needs of my little sisters and sometimes give some to mom."
– *School boy from Kapata (workshop with school children aged 13–17)*

"One day I almost lost my life in the well. The ground below my feet gave away and I fell into the hole. Fortunately, my friends were there to rescue me. They sent a rope down to pull me out."
– *Out-of-school boy miner from UCK community (workshop with out-of-school children aged 12–17)*

After work, do you feel pain or discomfort in your body?

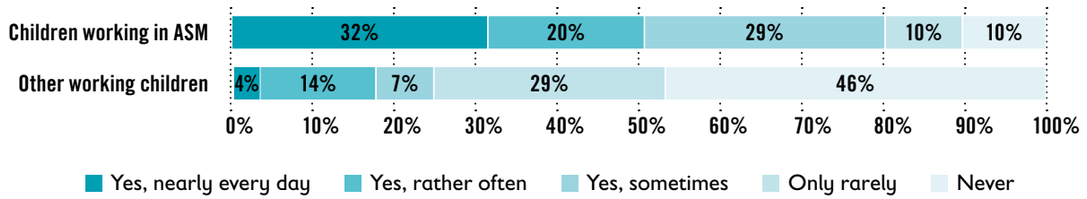


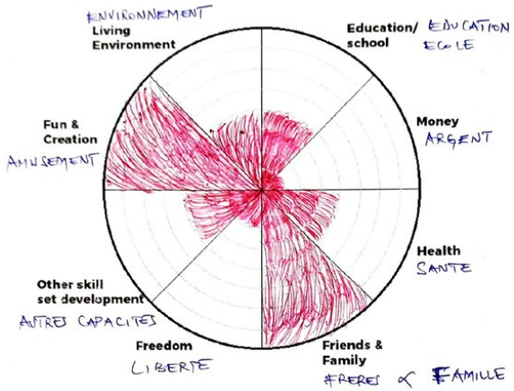
Chart 7: *Pain or discomfort after work, comparing children working in ASM and other working children*[30]

28 The correlation is r = 0.3508, sig = 0.0245
29 Data is from a quantitative survey with 150 children in ASM families, 69 observations.

d. Psychological Wellbeing of Children Working in ASM

Negative emotions such as anger, stress and worry are common among children living in ASM communities.

Apart from the negative impact on physical wellbeing, mining can be morally and psychologically hazardous for children (ILO 2019). 88% of the children working in ASM report at least one type of negative emotion that they feel most of the time. The most common negative emotions are stress (49%), anger (46%) and worry (39%). However, our survey shows that these emotions are common among all the children that live in ASM communities, whether they work in ASM or not (Chart 8).



Wheel of life filled in by a 16 year old girl in Kapata.
The children coloured the wheel to indicate how satisfied they are in the different aspects of their lives (the more it is filled the happier they are) – a warm up activity that was then used to have discussions with the children.

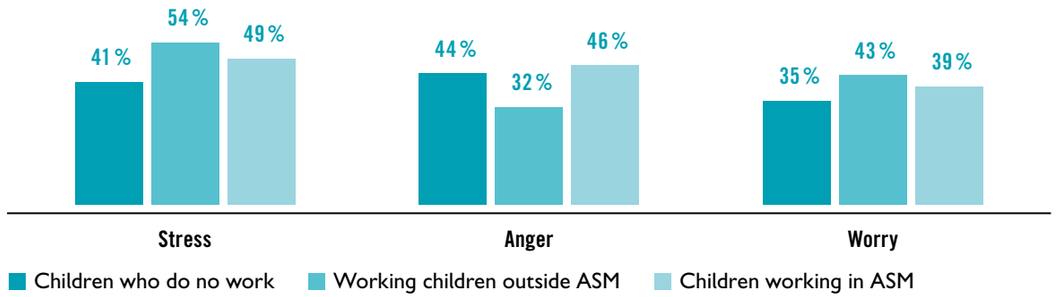


Chart 8: *Top negative emotions of children in ASM communities*

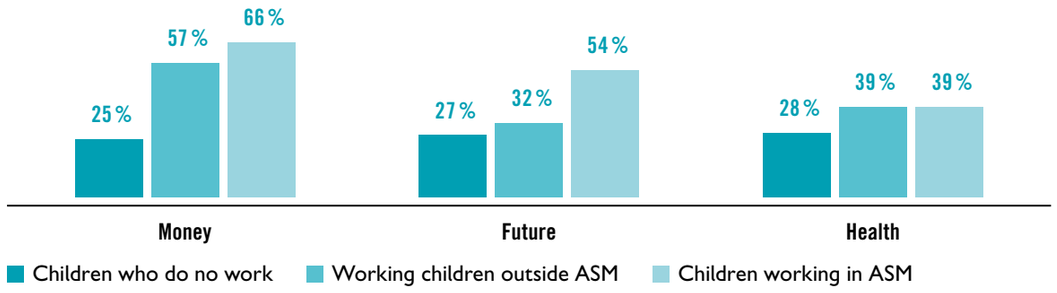


Chart 9: *Top worries of children in ASM communities*

e. Plans for the Future

Looking at these results, it is not surprising that children working in ASM also seem less optimistic about their future. While more than half (51%) of the working children outside ASM say they hope to find work after going to university, this is only the case for 24% of the children working in ASM (Chart 10).

Most children working in ASM (46%) realise the importance of obtaining a technical skill to be able to secure a job in future, even though there may not be many opportunities for them to obtain a technical skill. At the participatory workshop with secondary school children, "car mechanic" was considered the most important technical skill to secure a job easily in their communities. A small group (17%) think mining is the most suitable job for them.

What do you think is the most suitable job for you in the future?

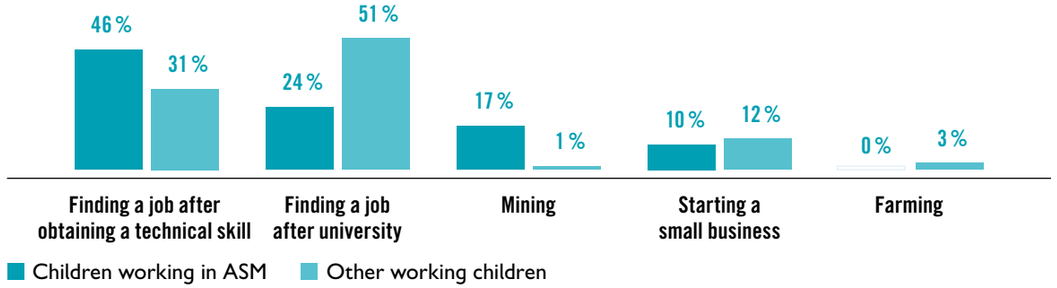


Chart 10: *Plans for the future: children working in ASM vs. other working children*

Children work in a mining site, Kolwezi.
© Hugh Kinsella Cunningham / Save the Children

2.3 Living Conditions of Children in ASM Communities

The living conditions in ASM communities affect all children in these communities, whether they work in ASM or not. The conditions in the ASM communities linked to the mining activities and negatively impacting children's healthy development are usually the environment (dust and pollution), safety (child protection risks), as well as water and sanitation.

2.3.1. Safety Risks in the Mining Communities

Many ASM sites are located in close proximity to residential areas. Some are even in the middle of residential areas (BGR 2021), which means that children are often close to the mining pits even though they may not necessarily engage in mining activities. We also found that many children who are selling food and drinks are in fact serving the artisanal miners.

"I am forbidden to go play at the mine because my sister almost died there. She went with her friend to sell donuts, and on the way down, she slipped. Fortunately, a dad was there to rescue her."
– Children's workshop

According to the 2020 study by the Impact Facility, even some ASM sites that are undergoing formalisation and who are in the process of improving tunnel safety are at high risk of tunnel/ground collapses (TIF 2020). This poses great risks for not only adult miners but also for children present at the mining sites, whether they are working in the tunnels, above the surface or just selling items or playing near the mining pits. Both parents and children are generally well-aware of this risk, and children claim they are often warned by their parents to avoid the mining site if they have no business there.

Apart from the direct risk from collapsing tunnels/ground, other risks that concern the safety of children are also prevalent in ASM communities. Parents and children widely complain about the violent crimes in their communities, such as armed robbery (bandits), fighting and even kidnapping (Chart 11).

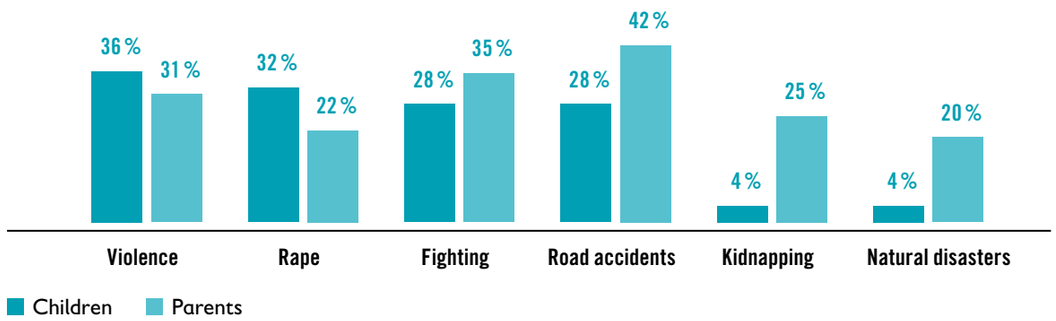


Chart 11: *Perceived risks in ASM communities by mining parents and children*

White residue appears on soil in Mulumbu village, where communities complain of environmental devastation as a result of proximity to the Tenke Fungurume mine (perception of communities).
© Hugh Kinsella Cunningham / Save the Children

2.3.2 Water and Sanitation

Limited access to clean drinking water is a common issue affecting the health and safety of children in ASM communities. Almost all families share water sources with many other families, be it the public water utility (30 %) or wells (57 %). The majority (56 %) of the water sources require at least a 10-minute walk to reach, and up to 30 minutes or more for some families (18 %). The task of fetching water often falls onto the shoulders of children, not only at homes but also in schools. Children complained about schools using fetching water as corporal punishment, asking children to carry heavy cannisters of 25 litres.

"We are worried because every time we are given the punishment of fetching water from the river, it is really putting our life in danger. It is possible that a student slips and falls into the water or gets hit by motorcycle or a car. Who will be responsible then?"
– participatory workshop with school children

A large majority of families (84 %) share toilets with other families in ASM communities.[30] Many children (41 %) and parents (39 %) complain about the unsanitary conditions of the toilets. Shared toilets with poor hygiene conditions not only expose children to the risk of contracting diarrhoea, but they also cause child protection risks as many children (32 %) say they worry about the frequent rapes in their communities. Nearly a third (31 %) of the parents also worry that the toilets are not safe for their children.

30 In rural mining communities, almost all families use shared toilets.

2.3.3 Dust and Pollution

The main complaint children (59%) and parents (66%) have about their living environment in ASM communities is dust and air pollution. As many ASM communities are located very close to the mines and quarries, both artisanal and industrial, they are exposed to dust from the mines and roads. According to the 2020 study by the Impact Facility, "chronic dust exposure related to large trucks traveling along community roads transporting ore contributes to respiratory problems and even lung disease among local residents, including children" (TIF 2020). The long-term impact of airborne chemical exposure on children's health is yet to be studied further.

Summary on the Situation of Children in ASM Communities

In summary, children in cobalt ASM communities face an education crisis that has been worsening in recent years and was further impacted by the income shock that ASM families experienced as a result of a cobalt price slump and interrupted unstable supply chains caused by the COVID-19 pandemic. With the increase in school dropouts, child labour in ASM continues to be a common phenomenon. School fees are the main obstacle to education and a driver for child labour unregular school attendance and dropouts. Older children in secondary school age often engage in mining work to pay for their education, while the younger children in primary school age are forced to drop out of school.

The study found that a significant percentage of children aged 5 and over work, and of those 42% work in ASM. The percentage of children working rises the older they get, with a steep increase in children working from the age of 12 and over. Whether in school or not, children working in ASM spend long hours at work, and as a result, feel the impact of hazardous work on their health, experiencing frequent pain and discomfort in their bodies as well as small and bigger injuries at work. Realising their desperate state, children in ASM communities, especially those working in ASM, generally have poor psychological health with pervasive negative emotions, and regardless of having dreams about university education, are quite pessimistic about their future career options.

The poor conditions in ASM communities that are linked to mining activities and negatively affecting the health and safety of children are: the close proximity of the mines to residential areas, violent crimes; the distance of the water source both from homes and school that burdens children with the task of carrying heavy water containers and walking for a long time on busy roads; and the air pollution from the mines and roads to transfer ores that could potentially have a lasting negative impact on the children's health.

COMMUS copper mine in the midst of the town of Kolwezi.
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Children work in an ASM site, Kolwezi.
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3. Disengagement and Formalisation

3.1 The Implications of Disengagement as a Risk Multiplier for Child Rights

The conditions at the ASM communities threaten the very survival and healthy development of children. Being one of the worst forms of child labour, children working in ASM is the most serious violation of their rights, and also poses the biggest reputational risk for businesses. As already mentioned in chapter 1, this reputational risk has led many downstream companies to dissociate from ASM and focus more on keeping their cobalt supply chains ASM-free.

However, child labour in cobalt ASM is a complex phenomenon that while driven by the contextual poverty, is interlinked with many structural issues in the mining sector. Table 1 gives an overview of some systemic issues behind child labour in the ASM sector and shows how disengagement of downstream companies indeed increases the child labour risk and has serious consequences for children in ASM communities in the DRC.

Table 1: Systemic Issues Behind Child Labour and Child Rights Risks and Downstream Disengagement as Risk Multipliers

Issue	Cause of the Issues	Downstream Disengagement as Risk Multipliers	Implications for Child Labour Risks
Informal and illegal status of most ASM sites with regards to mining rights	**1)** 87% of ASM takes place on concessions dedicated to industrial mining. Concession licence holders need to have an agreement with the ASM cooperative to grant it legal status. However, industrial concessions do not want to be officially associated with the ASM, and thus, there is currently no active agreement between a mining concession and ASM cooperative in place (BGR 2021, see also Box 5, page 36). **2)** ASM sites with a registered cooperative is not guaranteed a legal status unless they operate in a special zone dedicated to artisanal mining (ZEA). Only three ASM are currently operating within ZEAs (BGR 2021)	Pressure from downstream players to dissociate from ASM pushes industrial concessions who do not want to be held responsible for human rights abuses at the ASM sites to dissociate with ASM officially and not get into contractual relationships, even though most tolerate ASM activities in their concession	It prevents direct involvement in ASM by international organisations and donors, deters the process of formalising the ASM sector and hinders the prevention of child labour
Stigmatisation of ASM	Due to the serious human rights abuses and widespread child labour in hazardous conditions, ASM and any entity associated with it have been under serious media scrutiny. While the reports have focused on exploitation of ASM communities by international companies, they often failed to emphasise the importance of this sector on the livelihoods of tens of thousands of families	Downstream actions to remove ASM from their supply chain increases the stigmatisation of ASM	Stigmatisation of ASM brings hopelessness that the situation is too dire to fix and deters upstream and downstream players to engage in ASM to improve the situation in ASM communities
Insufficient income from cobalt for ASM communities/miners	Complex and non-transparent trade relationships and cobalt price volatility	Investment in ASM to improve productivity and other alternative income opportunities in ASM communities needs more engagement from the downstream actors, which is currently only the exception and not the norm	Complexity and non-transparency of the cobalt supply chain leads to miners capturing a very small share of the end price of cobalt and makes them vulnerable to price changes and low income. Child labour is one of the mechanisms the ASM communities use to deal with the income gaps
Lack of sustainable employment alternatives	No other industries are developed in and around mining towns, with limited investment to develop other sectors	Insufficient engagement with LSM on their positive impact on local communities, especially ASM communities. Currently LSM offers significantly less direct employment at the mine level and mostly to skilled workers, many of whom come from overseas (TIF 2020)	Lack of alternative employment opportunities, especially for children and youth, makes it extremely hard to eradicate child labour. When children are removed from a more formalised and well monitored mine, they are likely to just move to a less monitored mining site
Lack of monitoring at mining sites	**1)** Monitoring and inspection by government authorities is not sufficient **2)** Cooperatives have the responsibility to manage the ASM sites and ensure that no miner is under the age of 18. However not all ASM have cooperatives[31] **3)** Existing cooperatives have limited capacity and incentives to prevent child labour **4)** Close proximity of mining sites to residential areas makes it challenging to prevent child labour as children have easy access to the mines whether they engage in mining activities or not **5)** Lack of walls/fences around the ASM sites makes it hard to control access	Establishing walls/fences around the mines, capacity building of the cooperatives and establishing better monitoring systems require extensive formalisation efforts and investment, which is not possible without more engagement of the downstream companies	Children are far more likely to be present at a mining site with no cooperative or at one with limited capacity to monitor and manage the mining site. Additionally, lack of a remediation system puts children at further risk if they are simply removed without intervention (See 3.3.4.)

31 According to the BGR report in 2021, 41 out of 52 (77%) ASM have cooperatives.

In line with the conclusion made in Table 1, according to the OECD, "de-risking" by removing ASM from the supply chain rather than engaging it, can have serious negative consequences for children in ASM communities, and therefore, is not recommended. The OECD acknowledges the risk that downstream disengagement can put "pressure on large-scale miners to avoid constructive engagement with ASM, likely rendering ASM working conditions more hazardous". Company actions to reduce the risk of child labour in their supply chain should "prevent the child from being pushed into a more precarious situation" (OECD 2017).

One recent example of the dangers of downstream companies engaging with ASM is the case of Huayou Cobalt, China's biggest cobalt producer, who has been leading the formalisation efforts at the two model ASM sites investing millions of dollars to improve the working conditions and establishing monitoring systems to prevent child labour at the mining sites. Huayou Cobalt has been sourcing from the two model ASM mines, establishing transparent buying practices at the mine site, tracing the ASM cobalt from mines to its smelters in DRC (TIF 2020). However, in 2020, Huayou Cobalt was pressured by its customers to stop buying artisanal cobalt (Financial Times 2020).

"Artisanal mining is a lifeline for millions of impoverished people in the DRC. We need to see companies working with the authorities to formalise it – make it safer, remove children, provide miners with a fair price. By refusing to buy from artisanal miners, Huayou risks making the situation for these miners worse, not better."

– Mark Dummett, head of business, security and human rights at Amnesty International (Financial Times 2020)

3.2 Formalisation and Cooperatives

3.2.1 Slow Formalisation Process

In an attempt to counter the disengagement trend and with the understanding of their immense importance for the local community, a range of formalisation efforts have been taking place, with the goal to improve the working conditions and standards in these mines. In order to formalise ASM in the industrial mining concessions, an active cooperative is needed who signs an MoU with the concession holder to obtain full legal status. Cooperatives are government-approved entities, which are tasked to organise pit owners, supervisors and diggers on ASM sites and to make sure contracts between owners or traders with diggers are fair.

Box 5: Main Role of Cooperatives

"Cooperatives are legally distinct entities and are awarded the right to operate by the mining ministry, and the jurisdiction over specific ASM sites by the provincial government. Their primary responsibilities are to organise and control pit owners, pit supervisors and diggers on the ASM sites, pay any requisite taxes and royalties, and report to SAEMAPE. The cooperative has the right to check contracts between pit owners/traders and diggers and is obliged to ensure that they are reasonable and fair."
– (TIF 2020)

Unfortunately, the process of formalisation has been slow. A large part of artisanal cobalt mining takes place illegally or at least in an informal "grey zone of tolerance" on industrial mining concessions instead of the areas allocated by the government for ASM activities (ZEAs).[32] Concession holders usually do not want to take responsibility for the ASM and thus refuse to enter into an MoU. As a result, to date the legal status of ASM has not been improved for most ASM (BGR 2021).

Furthermore, our survey shows challenges in the management and coverage of cooperatives. Technically, the diggers are required to be members of a cooperative to be able to have access to the mines, as is the case in the formalised sites. However, in reality, this is not the case in all mining sites with an active cooperative. Although all artisanal miners who participated in our quantitative survey worked in mines with an active cooperative, only 66 % identified themselves as members. In addition, as the effective functions of the different cooperatives vary greatly, some artisanal miners may not see that the benefits outweigh the costs of membership. To finance themselves cooperative management can demand a fee from the members, which can be up to 20 % of the production (OECD 2019). This is a considerable sum for poor miners already earning barely enough to sustain themselves and their families. 37 % of cooperative members who participated in our survey listed the membership fees as the main disadvantage of membership.

Even an ASM mine with necessary legal permits and management by a cooperative may still not be considered "formalised" according to international standards, for example if the working conditions of the mine do not satisfy the minimum safety regulations (such as the depth of the pits) and working conditions.

3.3 The Initial Impact of Formalisation on Child Rights

3.3.1 The Eight Mining Communities Included in this Study

To support the formalisation process, some downstream and upstream players took the initiative to create "model mines" to pilot formalisation efforts in the ASM sector. Partnerships were created among downstream and upstream actors, the local government and NGOs to improve the working conditions and eliminate child labour in the project mines. While so far there has been no industry-wide standard to certify what is considered "formalised" (which might change with the application of new EGC standards[33]), the formalisation efforts generally have had the following main goals:

1. To create decent working conditions by improving health and safety, water and sanitation
2. To remove child labour
3. To increase productivity and income for artisanal miners
4. To establish direct buying practices and traceability
5. To legitimise the ASM operations and protect artisanal miners from harassment by government agents and the military

In the course of our study, we visited a total of eight different ASM communities that included three ASM sites (Mutoshi, Kasulo, Kamilombe) as part of ASM formalisation projects: one being the Mutoshi project and the other two being CDM mines with ongoing formalisation efforts.[34]

32 The reasons behind the difficulties in obtaining legal status for most ASM mines are explained further in the Impact Facility report "Digging for Change" (2020) and the BGR report "Mining Conditions and Trading Networks in Artisanal Copper-Cobalt Supply Chains in the Democratic Republic of the Congo" (2021).

33 In March 2021, EGC released its 'EGC Responsible Sourcing Standard' ("the EGC Standard") to support the establishment and maintenance of safe and strictly controlled artisanal cobalt mining zones in the DRC. For details, please refer to Appendix 3.

34 Even though the Mutoshi Project was concluded in October 2020, the research team confirmed that the artisanal mining activities continued without direct buying agreement with Chemaf. As the same cooperative (COMIAKOL) was still managing the site, the study considered it a "model mine" with formalisation efforts when comparing it to other sites with no formalisation efforts.

Amongst others, there is one large ASM site, UCK Drain, managed by multiple cooperatives, but without any other formalisation efforts. The three other ASM communities were rural quarries without any cooperatives.[35] Observations and comparisons between these ASM sites along with secondary data from reputable sources[36] allowed us to detect some initial impact of formalisation on child rights. In the following section, we analyse if and to what degree ASM formalisation so far has had an impact on family income, child labour elimination and women's participation.

3.3.2 Impact of Formalisation on Family Income

Holding the global price of cobalt constant, income increase from artisanal mining can happen in the following ways:

1. increase in productivity (if pricing is at similar levels and there is no increase in costs for workers),
2. reduction in costs such as transportation and royalties/bribes and
3. higher price offered through more direct buying practices.

a. Productivity

So far, the only ASM with reported productivity increase is the Mutoshi Project with the help of its concession holder, Chemaf, using bulldozers to remove soil and rock above mineral (stripping) repositories, thus eliminating the shafts and creating open pits for ASM activities. The stripping process with heavy machinery eliminated most of the underground pits (shafts) and created open pits, which not only drastically increased the productivity but also reduced the hazardous conditions of the mines. Additionally, Chemaf and SAE-MAPE technical staff helped miners determine where to mine and showed miners appropriate techniques to gain productivity (Silva et al. 2019).

In the other two CDM mining sites with ongoing formalisation efforts, no similar changes could be observed. In all mines, the productivity has not tremendously changed during the process of formalisation, mainly due to the absence of significant investment in equipment such as pumps to lower the groundwater table below the orebody, and electric winches to increase the haul rate and prevent bottlenecking (TIF 2020).

b. Income

When we looked at the ASM workers' ability to cover their families' basic expenses, we found that the members of the cooperatives are significantly better off than non-members. As shown in Chart 12, cooperative members are much more likely to be able to afford family's basic expenses every month (58 %) than non-cooperative members (37 %). Even when we control for gender (as the washers are mainly women and are paid less), this difference is still significant. At this stage, it is unlikely that such difference is due to the productivity increase of cooperative members, but because of other benefits of being a cooperative member, which makes it easier to sell the ores for a good price (see Chart 13).

3.3.3 Impact of Formalisation on Access to Education

With increased family income, children should be able to stay in school longer. However, when comparing children of artisanal miners working in different phases of formalisation, we did not observe any significant difference in school enrolment and dropout rates. It is likely that the income difference is not big enough to offset the income shock all artisanal mines experienced due to reduced cobalt prices and the COVID-19 pandemic.

35 Three informal ASM sites visited during the Phase 1 field assessment are COMIDE (COMIDE is not an informal mine site but an official industrial mine site dealing with illegal ASM), KISANKALA and MITONI MBIRI

36 Sources include the TIF report "Digging for Change" and the impact evaluation report for Mutoshi Project "The Mutoshi Pilot Project: Local Economic Impact of a Project Aimed at Formalizing Artisanal and Small-Scale Mining"

3.3.4 Impact of Formalisation on Child Labour

The model mines went to great lengths to prevent child labour, from barriers around the mines to ID checks at the gates and monitoring the sites. As a result, the issue of child labour has been effectively addressed at these mines according to various reports (Silva et al. 2019 and TIF 2020).

Having barriers, while likely not tackling any of the root causes of child labour, still seems fairly effective in keeping children out, in particular if there is an effective monitoring system by the cooperatives. For example, the research team did not observe any children working in Mutoshi and Kasulo sites, and while some children were observed working in Kamilombe[37], our researchers observed that fewer children seemed to be on site than at another comparable big mining site with no barriers surrounding it.

Indeed, our research team did observe that the largest number of children can be found in mines with no walls and no active cooperatives[38].

However, it is important to keep in mind that measures to keep children out of the mines do not sustainably tackle child labour, and might simply move it elsewhere, be it to different industries or locations.

Many NGOs, including Bon Pasteur, believe that child labour is simply transferred to other ASM sites (TIF 2020). Our findings from the study support this view as we found some anecdotal evidence that children of the artisanal miners from the model mines are now working in other mines. Even though the numbers we found are small (we came across 12 such examples), considering our rather small sample size and the fact that miners are likely to under-report their children working in ASM, it is not to be ignored. If the artisanal miners are working in model mines with improved working conditions, but their children are working in a different mine with worse conditions, it defeats the purpose of formalisation.

> "Not all mine sites deny children access. Mines like Kamilombe do not let us get in, but we can get through the security at Cinquantaire to work there, no one controls it."
> *– Participatory workshop with school children*

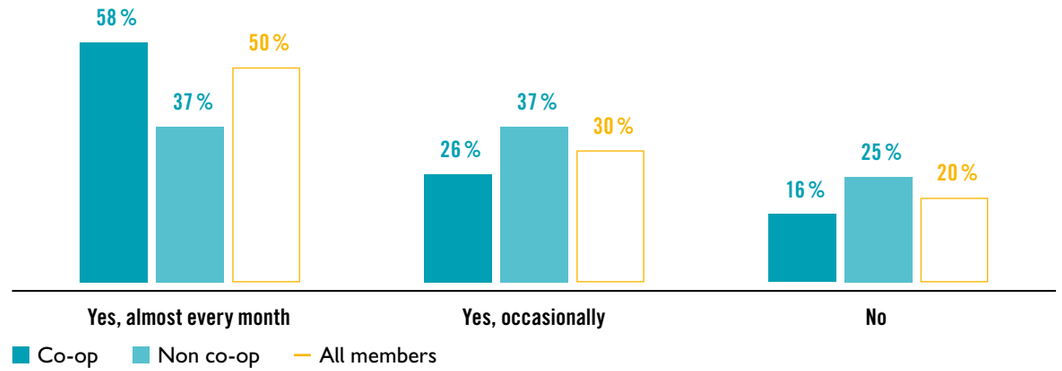

Chart 12: *Does your income cover the basic living expenses of you and your family?*

37 Where we could confirm the age of some children as 14–16 years old

38 During the first phase of the study, the research team visited four rural artisanal mines/quarries without any active cooperatives and found widespread child labour.

3.3.5 Impact of Formalisation on Gender

Research shows that women with increased earnings and bargaining power make greater investments in children's education, health and nutrition (DFID 2010). However, from our observation, the formalisation processes have only had a limited impact on women.

One of the hurdles was the fact that cooperative membership is generally only given to diggers, and as women mostly work as washers, they are much less likely to be cooperative members (TIF 2020).

However, one exception is the Mutoshi Project. In a typical ASM, work opportunities for women are limited as they are normally denied access to mining shafts. By creating open pits and eliminating the underground shafts, the Mutoshi Project not only made it safer for miners, but made it possible for women to dig the surface for the ores and thus significantly increase their income and contribute to greater gender equity (Silva et al. 2019).

3.4 The Benefits and Challenges of Cooperatives

79% of artisanal workers who are currently cooperative members said they see some benefits of being a member. For a start, it gives artisanal miners a certain legitimacy and provides protection from harassment by government agents and the military. 33% of artisanal miners who are members of cooperatives say the advantage of being a member is "better protection" (Chart 13). It is worth noting that in the mines with formalisation projects, significantly more cooperative members felt they were better protected than in other mines (a 25-percentage-point difference).

Apart from increased protection, cooperatives can authorise buyers to set up on-site depots/buying centres, which facilitates selling of the ores, and strike a deal with the on-site buying centres. This could explain why 31% of cooperate members said cooperatives make it easier to sell minerals and 16% said it helps negotiate for better prices (Chart 13).

According to our interviews with the representatives of several cooperatives active in and around Kolwezi, cooperatives are also supposed to take care of the treatment if accidents happen at work, and artisanal miners can only receive support and technical training

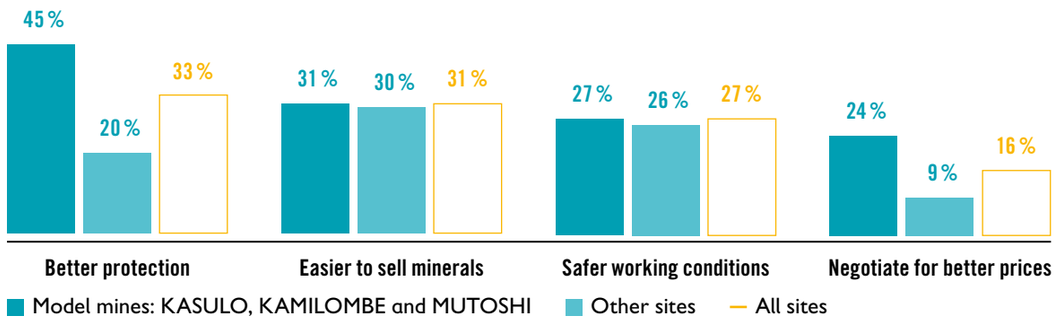

Chart 13: *Advantages of being a member of a cooperative*

by SAEMAPE if they are members of a cooperative.[39] The survey with cooperative members found that a significant portion (27%) thought being a member made the worker conditions safer (Chart 13). However, in all four mining sites included in the field assessment where one or more cooperatives are managing the sites, no miners were using any personal protective equipment (PPE), even in the mines with formalisation projects.

As with the perceived advantages of being a member of a cooperative, there are also alleged disadvantages of the cooperative membership. Far more artisanal miners are unhappy with the insufficient negotiation power of the cooperatives regarding the price (49%) than the ones that see it as an advantage (16%). This is especially so in the mines with formalisation projects (Chart 14). Because buyers have invested in the mines (e.g. by providing machinery, fencing etc.) they might expect lower prices and this limits the negotiation power of the cooperatives, as observed in the Mutoshi Project (Silva et al. 2019) and CDM projects in Kasulo and Kamilombe (TIF 2020).

3.5 Best Practices for Formalisation

As we shared in Chapter 2, the children's situation in ASM communities needs significant improvement. The data above shows it is still a work in progress to improve the key impact areas such as education, income, safety and child labour.

However, we could observe that the formalisation efforts have achieved some initial positive impact and best practices are emerging to be referenced for future formalisation initiatives. Table 2 describes best practices used mostly by the ASM formalisation initiatives, their intended impact and possible limitation that should be considered when replicated. These findings could potentially be helpful for future formalisation efforts, in particular in light of the government's recent efforts to formalise the ASM sector by appointing the Entreprise Générale du Cobalt (EGC), a subsidiary of Gécamines, as the sole buyer of artisanal cobalt production and assume a monopoly position. In this scheme, EGC will lead the formalisation process of ASM in partnership with Trafigura, a Swiss-based commodity trading company, and the NGO Pact.[40] While it is currently hard to assess the impact of this project[41], there is some expectation in the industry that this initiative can indeed support the formalisation process and hopefully lead to the replication of the best practices described in Table 2.

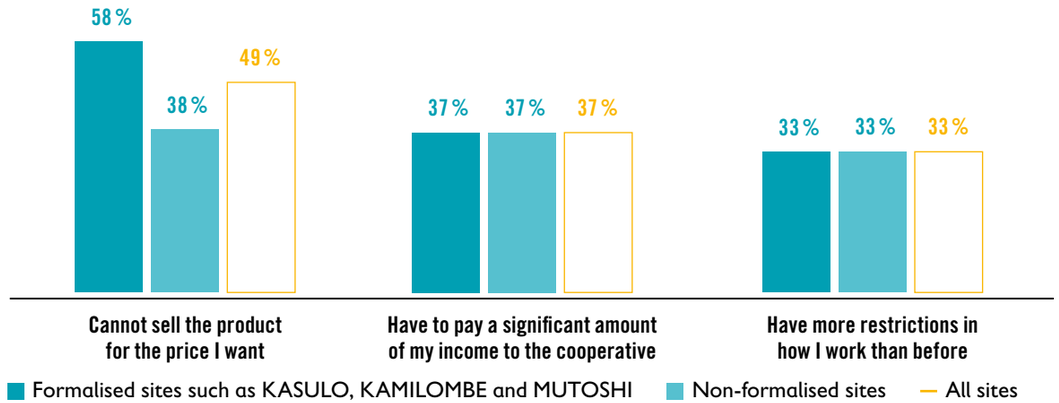

Chart 14: *Disadvantages of being a member of a cooperative*

39 Artisanal and Small-scale Mining Authority

40 The EGC standards can be found in Appendix 3.

41 According to the BGR report, the capacity of the EGC to lead the process is hard to assess and the impact of this move on the ASM sector remains to be seen (BGR 2021).

Table 2: Best Practices for Formalisation

Best Practice Measures	Examples	Intended Impact	Limitations
Partnership between ASM and LSM/ concession holder where the LSM provides knowledge, technical equipment to improve productivity of ASM, and in return, benefits from the ASM cobalt at an agreed price	Mutoshi Project was the only ASM site where the concession holder takes advantage of their heavy equipment to remove soil and rock above mineral (stripping) repositories, thus eliminating the shafts and creating open pits for ASM activities	The elimination of shafts and creating open pits not only drastically increases the productivity but also reduces the hazardous conditions of the mines and allows more women to engage in mining activities who are otherwise denied access to mining shafts	Takes considerable amount of investment from the LSM, and thus could be a temporary arrangement before LSM takes over for mechanical mining the deep mineral deposits.
Direct sourcing relationship between the ASM and the concession holder with price agreements	In the Mutoshi Project, the concession holder Chemaf established direct buying practices with the cooperative COMIAKOL, where the cooperative could negotiate the price directly with Chemaf who is committed to purchasing all the cobalt produced by COMIAKOL members	It protects cooperative members from income risks related to volatility in market prices and fraud among traders and also guarantees traceability	Such price agreements are only sustainable if they benefit both sides. When the agreed price is higher than the market price, it is unlikely to sustain. On the contrary, if the prices are lower than the market price, the additional income from increased productivity as a result of technical support by the concession should be able to complement the difference, otherwise, the price agreement will not hold
Direct sourcing relationship between the ASM and the smelters/refiners	The CDM, subsidiary of Huayou Cobalt in the DRC, who oversees formalising two ASM sites (Kasulu and Kamilombe) has on-site depots for miners to store and sell the ores directly to CDM without transporting them to the open market	It protects ASM miners from fraud among traders, saves transportation costs and guarantees traceability	This partnership model only works if supported by the downstream customers. As in this case, Huayou Cobalt was pressured to stop buying ASM cobalt, effectively invalidating this relationship
Removing of child labour from ASM by fencing off the mining area and establishing monitoring at the gate and on site	Mutoshi Project (fences) CDM Kasulu (walls) CDM Kamilombe (trenches)	It protects children from hazardous working conditions at the mining site	1. ASM communities are characterised by widespread poverty and lack of alternative employment opportunities merely removing children from mining sites cannot eliminate child labour in this sector without addressing the root causes of the problem. Current formalisation projects do not sufficiently increase income of ASM families that would allow for the elimination of child labour. While children are kept out of formal sites, they still work in the more informal and less monitored sites. 2. There is currently no remediation system in place when child labour is discovered at the mining site except for NGO intervention. 3. Erecting fences requires a considerable amount of investment and may not always be possible, especially in large mining areas such as Kamilombe, where trenches were used as barriers but were not as effective.
Vocational training for children in ASM communities	Cobalt for development project is investing in infrastructure and training for vocational education. NGOs, Pact and Bon Pasteur also have vocational training programmes.	It creates alternative employment opportunities in ASM communities and addresses the root causes of child labour	The current scale of such programmes is limited and it is not linked to supply chains or part of a remediation programme. Also, the vocational training programmes should be linked to income-generating opportunities to be truly effective[42].

42 An example is a vocational training programme by Pact that followed a market study in the communities to ensure that children will be able to earn a sufficient income to meet their needs.

The market study can be found here: https://www.pactworld.org/sites/default/files/DRC_VocStudy_A4_ENG_F4_view.pdf
For more information about the Pact vocational training programme, please refer to https://www.pactworld.org/blog/pact's-vocational-education-programme

Children playing in the town of Kolwezi.
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4. Opportunities and Suggestions to Improve Child Rights in ASM Communities

The study found that the situation of children in cobalt ASM in the DRC might have deteriorated in the past few years due to the reduced income of their families following the cobalt price slump and COVID-19 pandemic. More children have left school in the past two years and started to work in ASM as their families are unable to pay for their education. This situation creates an urgency for more investment in cobalt ASM communities to improve the situation of the children and guarantee their basic rights, both through responsible supply chain practices and community development programmes.

De-risking the supply chain by disengaging from the ASM acts as a risk multiplier for child labour and child rights in general. The formalisation efforts in the "model mines" that were undertaken in the past few years showcased that there is a real opportunity for downstream and upstream actors to work together with the government and NGOs to improve child rights in the cobalt ASM communities. Both the gaps in current supply chain policies and practices and the best practices from the formalisation efforts create opportunities for companies to actively engage with ASM communities as part of their supply chains.

In addition, the new laws and legislations in Europe such as the likely European Commission Mandatory Human Rights and Environmental Due Diligence (mHREDD) law and Germany's supply chain due diligence act (passed in June 2021), will strengthen the regulatory framework for downstream companies sourcing cobalt from DRC. As a result of these laws, there will be more pressure on companies to demonstrate how they manage human rights and environmental risks in their supply chains. Thus, engaging in formalising ASM and improving child rights will be an opportunity for companies to implement what will be requested under the various due diligence laws.

Based on analysing the gaps and opportunities, we conclude the following key findings:

4.1 Suggested Interventions

Supply chain practices

- Traceability of the cobalt supply chain is improving with leading international brands mapping their supply chains to the smelters/refiners according to OECD recommendations.
- Current traceability efforts focus on proving there is no ASM cobalt in a company's supply chain, instead of engaging the smelters/refiners and other upstream actors to improve conditions in ASM.
- Even though disengaging from ASM might reduce the risks for businesses, it will worsen the child rights risks in ASM communities, and thus is not considered a responsible sourcing approach.
- ASM operation on a LSM concession without an agreement is illegal. The vast majority (87%) of today's ASM occurs under LSM concessions without valid agreements. This prevents direct involvement by international organisations and donors and deters the process of formalising the ASM sector. The stigmatisation of the ASM by downstream brands and buyers can only discourage LSM from meaningfully engaging with ASM. Thus, the downstream actors should facilitate the dialogue and partnership between LSM and ASM instead of distancing themselves.
- LSM can play a crucial role in the formalisation efforts to provide technical and machinery support to ASM and increase safety and productivity.
- Direct sourcing relationships between ASM and LSM/refiners can improve traceability and reduce costs for miners.
- Pilot initiatives to formalise the ASM sector can only be sustainable and scaled up if ASM is acknowledged and treated as part of the supply chains of downstream companies.
- Cooperatives play an important role in formalising the ASM sector but only with the technical and managerial support from customers and possibly NGOs.

Community development

- Impoverished families highly dependent on income from cobalt are extremely vulnerable to income shocks and thus significantly affected by the cobalt price slump and the COVID-19 pandemic leading to increased school dropout rates and child labour in the mines.
- Economic benefits of LSM to the local communities are mediated through government agencies, but the 'trickle down' effect is not always felt in mining communities even though they are in close proximity to LSM. LSM employs relatively few people, many of whom require specialist technical qualifications and are often recruited internationally. As a result LSM's positive impact on the communities is still rather limited.
- Children in cobalt ASM communities have been facing an education crisis mainly caused by school fees and related costs which is driving children to work as artisanal miners to pay for their education.
- Child labour in the mines is a desperate coping mechanism of impoverished families and not due to cultural norms or lack of awareness.
- Formalisation efforts can achieve a real impact on reducing child labour in the mines if supply chain practices are combined with community development initiatives to address the root cause of child labour-poverty. Monitoring systems to remove children from the mines can effectively reduce child labour in the sector if children have better access to education, miners increase productivity and income and there are more alternative income opportunities.
- Vocational training and entrepreneurship programmes need to be scaled up to provide more career opportunities for youth.

In line with the key findings of the study, we recommend the following interventions as opportunities to improve child rights for downstream companies. Each intervention is rated as "Low", "Medium" or "High" in the following five dimensions:

- **Impact:** refers to the level of change that can be expected through this measure in terms of improving children's rights.
- **Complexity:** refers to the complexity of the suggested intervention, such as development of complex processes and partnership of different stakeholders.
- **Resources:** refers to human and financial resources needed for the intervention.
- **Sustainability:** refers to the likelihood that the intervention will be lasting once a system is established.
- **Scalability:** refers to the likelihood that the intervention can be replicated to other ASM communities from a pilot intervention.

4.1.1 Engage ASM as part of supply chain to push for formalisation

Pilot initiatives to formalise ASM can only be sustainable and scalable if ASM is included in formal supply chains instead of individual programmes as part of "Corporate Social Responsibility" (CSR) and philanthropy work. Without acknowledging ASM as part of the supply chains, it is hard to push upstream and downstream players to engage with ASM in a responsible and effective manner to create large-scale impact.

Infographic table 1: **See chapter 4.1.1**

IMPACT	COMPLEXITY	RESOURCES	SUSTAINABILITY	SCALABILITY
HIGH	HIGH	HIGH	HIGH	HIGH
It can advance the formalisation process, reduce child labour and have a lasting impact on ASM communities	Needs an industry-level push and to establish partnership models with multiple stakeholders such as consumer brands, refiners/smelters, LSM/concession holders, ASM cooperatives, NGOs and government at various levels	Needs significant investment to improve the working conditions and productivity at ASM	There can only be systematic and lasting change in the ASM sector if it is part of the supply chain	Needs a consortium of downstream players to push for industry-level change

4.1.2 Set up a functional child labour remediation system as part of formalisation efforts

Currently, with the exception of some NGO-run projects, a remediation system is missing from ASM formalisation efforts. Remediation should ultimately be the responsibility of supply chain actors with the support of government and NGOs. A functional child labour remediation system needs to have the following components:

1. A low threshold reference system known and accessible to all stakeholders, which triggers a rapid assessment of the situation and remediation plan where adequate.
2. A case management system that can provide solutions for children in child labour situations. The system needs a network of case managers who work with the children and integrate them into suitable remedial programmes, as well as industry consultants who can work with the mines on system improvements and prevention.
3. A sustainable industry-driven funding mechanism to cover child labour case management costs. The system aims to create a cost-sharing mechanism across different supply chain tiers.

Infographic table 2: See chapter 4.1.2

IMPACT	COMPLEXITY	RESOURCES	SUSTAINABILITY	SCALABILITY
HIGH	MEDIUM	MEDIUM	MEDIUM	HIGH
It can protect the needs and rights of children by ensuring that when they are removed from regulated mines, they don't move on to less regulated ones to work	A referral system, case management system and a funding mechanism need to be established	Needs a network of well-trained case managers and sufficient funding to cover the case management costs	Can be sustainable if ASM is part of the formal supply chain and refiners/ smelters take it up	It can be easily applied to other ASM sites

4.1.3 Investment in ASM communities should focus on improving access to education

As the children in ASM communities face an education crisis that fuels the issue of child labour in the mines, investments in the ASM communities cannot effectively eliminate child labour without eliminating barriers to education. The school fees are the key hurdle in children's access to education. As the school fees are in place because teacher salaries are not fully covered by the education expenditure of the government, the education programmes should focus on funding the human resources instead of infrastructure alone.

Also, we do not suggest awareness-raising initiatives to increase access to education as the parents and children in ASM communities already highly value education and dropping out of school is usually a result of exhausted resources.

Increased access to education can be a part of a community-based child labour prevention programme, and can also be integrated into the child labour remediation system.

As most children working in ASM are older children of secondary school age, especially children aged 15–17, the education programmes should also focus on vocational training with alternative income opportunities.

Infographic table 3: See chapter 4.1.3

IMPACT	COMPLEXITY	RESOURCES	SUSTAINABILITY	SCALABILITY
HIGH	LOW	MEDIUM	MEDIUM	HIGH
Improving access to education can have a lasting impact on children's lives and can effectively reduce child labour	The biggest barrier to education for children in ASM communities is the school fees and related costs, which can be addressed by programmes directly targeting this issue	Funding is needed to cover the teachers' salaries, which are mostly covered by parents now	Sustainable in terms of impact on children benefited from the programme. However, it relies on continuous funding	It can be easily replicated in other ASM communities

4.1.4 Formalisation efforts should push economic partnership between LSM (concession holder) and ASM to improve productivity and safety

87% of ASM takes place on industrial concessions but without the support and involvement of the downstream players, the mining companies will be reluctant to engage.

The decisions and policies of LSMs regarding ASM on or near their concessions can also have a significant impact on ASM working conditions and human rights risks to which ASM workers are exposed. Entering into partnerships to lease the land could sufficiently formalise some mines that also meet certain governance criteria. This would allow international projects and initiatives to support government capacity building measures and regular, transparent monitoring (OECD 2019).

The partnership model between the LSM and ASM piloted by the Mutoshi Project can be a good example of the LSM using machinery to create a safer mining environment while increasing the productivity of artisanal mining and the participation of women.

4.1.5 LSM investment in ASM communities to improve the living conditions (infrastructure) should not only be considered a philanthropic contribution but to be expected as part of supply chain engagement

Economic benefits of LSM to the local communities are mediated through government agencies, but the "trickle down" effect is not always felt in mining communities, even though they are in close proximity to LSM (TIF 2020). The new Mining Code gives more attention to local development to ensure residents can benefit from mining activities taking place in or near their communities (OECD 2019).

Even though some LSM companies currently make generous voluntary contributions to local infrastructure and service development (TIF 2020), they are not assessed and monitored for the level of improvements they made in the communities they benefit from, and not expected to meet a minimum level of standards in terms of their positive impact in those communities.

Infographic table 4: See chapter 4.1.4

IMPACT	COMPLEXITY	RESOURCES	SUSTAINABILITY	SCALABILITY
MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM
LSM engagement with ASM can effectively move forward the ASM formalisation process and contribute to the elimination of child labour by increasing mining families' income in the longer term	Can follow a similar multi-stakeholder partnership as the Mutoshi Project	Needs investment in heavy machinery and barriers around the mine	This model might only work medium-term until the concession holder needs to take over the area for industrial mining	It can be replicated to ASM sites located in the industrial mining concessions/PE, if the concession holder does not plan to do industrial extraction in at least a few years

It is especially important that LSM operating near ASM communities report on their impact on the mining communities (e.g. job creation, education support and development activities). Downstream customers can support and accelerate this process by establishing a set of criteria defining their expectation towards LSMs concerning their community impact.

Infographic table 5: See chapter 4.1.5

IMPACT	COMPLEXITY	RESOURCES	SUSTAINABILITY	SCALABILITY
HIGH	LOW	MEDIUM	MEDIUM	MEDIUM
Can improve the living conditions of children by infrastructure investments such as roads, WASH, health clinics etc.	Due diligence process should capture how LSM improved the living conditions in ASM communities	Infrastructure investment needs significant financial resources	Can sustain if the upstream and downstream customers monitor the engagement through due diligence process	Can scale to ASM communities in close proximity to LSM

Conclusion

The situation of the children in cobalt ASM communities observed in this study can be a baseline for companies and other stakeholders to monitor the changes and possible impact of their actions (or inactions) on children in cobalt ASM communities. The child rights risks we have identified inform all industry players on the most salient ones and urge them to take action. International companies are expected to be leaders in improving the child rights situation in communities they are benefiting from. As the regulatory framework for due diligence is becoming more stringent, the accountability for companies sourcing cobalt from DRC is bound to increase. We hope that the findings and recommendations of the study allow companies sourcing from the DRC to take up pro-active measures to improve the children's situation in their cobalt supply chain.

Appendix 1: Study Overview

A 1.1 Study Design

A 1.1.1 Study Phases

The research was carried out in two phases. Phase 1 started in the second half of 2020 and included desk research, in-depth interviews with consumer brands, NGOs and industry associations and the preliminary assessment in the field. Due to the COVID-19 pandemic, the field assessment was delayed until early 2021 and carried out in three rural ASM in Lualaba province, 70–140 km from the rural town of Fungurume. The quarries were Comide[43] near Kawama village, Kisankala near Kisanfu village and Mitoni Mbiri near Kambalasani village.

During the Phase 1 preliminary assessment, researchers followed semi-structured interviews to capture the qualitative information. The researchers covered the questions and topics outlined in the interview guide and encouraged the artisanal miners and children to freely express themselves and provide more in-depth information on the topics discussed.

In total, 116 valid interviews were conducted, 57 of which were with parent artisanal miners, and 59 were with children in ASM communities. Key focus areas and hypotheses were derived from the preliminary assessment and used as a base to develop a larger-scale quantitative survey in Phase 2 of the study.

In the Phase 2 field assessment, the quantitative surveys were designed based on the preliminary assessment of Phase 1, and were conducted in June 2021 simultaneously in five ASM communities in or around Kolwezi, Lualaba. In total, 300 responses were collected: 150 from artisanal miners and 150 from children, who are either children of artisanal miners or children who work in ASM. Along with the quantitative surveys, 20 in-depth interviews were conducted with the village chiefs, the representatives from the ASM cooperatives, school principals and artisanal miners. Four half-day/full day workshops were conducted with male and female artisanal workers separately, school children and out-of-school children. Field assessment also included observations in the four ASM sites and five nearby communities.

A 1.1.2 Research Tools

In-depth interviews with international stakeholders

In-depth online interviews were carried out with consumer brands such as BMW, Daimler, Fairphone, Volkswagen; international NGOs such as the Impact Facility, Pact and industry association RMI (Responsible Minerals Initiative). The interviews focused on companies' supply chain policies and practices regarding ASM cobalt and their engagement in formalising the ASM sector.

Semi-structured interviews with artisanal miners and children

Qualitative semi-structured interviews were used during the Phase 1 preliminary assessment focusing on children's situation. In addition to interviewing the artisanal miners and children, the researchers were expected to observe the living and working conditions of the artisanal miners, including the prevalence of child labour.

Quantitative surveys with artisanal miners and children

The quantitative surveys were developed for Phase 2 of the field assessment based on the key findings and tested questions from the preliminary assessment. It consisted of two different versions: one for parent artisanal miners with children under the age of 18 and the other for children or artisanal miners who work in ASM.

The parent artisanal miner survey had 66 questions, including children's information, work background and situation, family income and expenditure and living conditions. The parent survey was designed for artisanal miners who have at least one child under the age of 18, and thus, children were the focus of the survey. The survey took an average of 40 minutes to complete when conducted as a one-on-one interview.

43 COMIDE Is not an informal mine site but an official industrial mine site dealing with illegal ASM

The children's survey had 59 questions, focusing on their own background, education, working and living conditions etc. It took about 30 minutes on average to complete.

Researchers conducted the data collection by recording most of the quantitative survey responses on tablets (offline) and later synced the data on to a secure online platform (SurveyCTO).

In-depth interviews with various community-based stakeholders

During the Phase 2 field assessment, 20 in-depth interviews were conducted with community leaders (5), representatives of the ASM cooperatives (6), school principals (5) and artisanal miners (4).

- The interviews with the community leaders collected information on the general situation of the mining communities, the recent changes and challenges and support they receive from various actors etc.
- The interviews with representatives of the ASM cooperatives collected information on the structure of the cooperatives, the benefits for the members, challenges, and impact of recent changes etc.
- The interviews with school principals looked at the challenges schools and students face alike, the reasons for dropping out etc.
- The interviews with artisanal miners tried to get a more thorough picture of their lives and the situation of their children.

Participatory workshops with artisanal miners and children

Four participatory workshops were conducted respectively with male and female artisanal miners, school children and out-of-school children in an ASM community. The workshops used participatory exercises to encourage participants to share their experiences living and working in ASM communities.

A 1.1.3 Site Selection

Most of the Congolese cobalt-copper production takes place in a region known as the "Copperbelt", an area hosting copper and cobalt deposits that extends over a region more than 500 km long, both in southern DRC and northern Zambia (OECD 2019). In 2015, the southern section of Katanga province, through which the Copperbelt runs, was divided into the new provinces of Haut-Katanga and Lualaba (CEGA 2016). The province of Lualaba was selected for the study, where all three of the "model mines" were located.

For the Phase 1 field assessment, our local implementer, Centre Arrupe pour la Recherche & Formation (CARF), selected three rural ASM sites 70–140 km from the rural town of Fungurume. The ASM sites were Comide near Kawama village, Kisankala near Kisanfu village and Mitoni Mbiri near Kambalasani village, where CARF is training or planning to train local ASM miners to form cooperatives. These were remote rural quarries without any form of miners' organisation/association, and thus, no formalisation efforts had taken place yet.

For the Phase 2 field assessment, with consultation from the Impact Facility, BGR and our local implementer, Innovative Hub for Research in Africa (IHfRA), we selected five ASM communities in and around Kolwezi, Lualaba, where the three "model" mines are located. The communities are: Mutoshi, Kasulo, Kapata, Tshala and UCK. Apart from the "model mines", these communities were located in close distance to a major ASM, Drain UCK and some other ASM sites where at least one cooperative is currently active.

The main reason for choosing these ASM communities in the Phase 2 field assessment was to observe the differences between ASM sites in different stages of formalisation.

A 1.1.4 Channels to Access Artisanal Miners

Some interviews took place in the mines, some inside the homes and others somewhere in the community. Various channels were used to access the artisanal miners and children:

1. **Through visiting the ASM sites:** researchers in both the Phase 1 and Phase 2 field assessment visited ASM sites and invited miners to accept the interview. If they accepted, the interview took place at the site, but away from other miners to ensure their privacy. For the Phase 2 field assessment, such visits and interviews were only possible with the permission from relevant authorities including the representative of the cooperative in charge of the site.
2. **Community leaders:** In the Phase 2 field assessment, the research team first interviewed the community leaders, gained their permission to interview the artisanal miners, and were referred to the homes of artisanal miners. When artisanal miners were interviewed at their homes, one of the children under the age of 18 was also selected for the interview. Weight was given to those who were out of school and/or working.
3. **Cooperative management:** In the Phase 2 field assessment, the research team contacted the management of the cooperatives to gain permission to access their members.

A 1.1.5 The Researchers and Principles

For the Phase 1 field assessment, the research team consisted of our local implementer CARF (Centre Arrupe pour la Recherche & Formation) staff and the miner representatives they trained on establishing cooperatives.

For the Phase 2 field assessment, the research team consisted of our local implementer IHfRA (Innovative Hub for Research in Africa) staff overseeing the field work, and nine quantitative enumerators and three qualitative interviewers trained by IHfRA prior to the field assessment.

The researchers were briefed and instructed on the interview and survey principles and familiarised themselves with the survey questionnaires beforehand. Some of the principles that the researchers were required to follow included:

- Obtain oral consent to speak with the miners and his/her child/ren prior to conducting any discussions. The consent and understanding of confidentiality were integrated into the quantitative surveys and required confirmation before moving on with the rest of the survey questions.
- Obtain oral consent before taking any pictures of miners and written consent for taking children's pictures.
- No payments allowed for interviews. Small gifts (food or beverages, small souvenirs or stationary for children) however were provided.
- No judgment should be expressed when asking any questions and no comments should be made to the responses to prevent leading/guiding the answers in a certain direction. The researchers should stay neutral throughout the interview process.
- Provide guarantees that the study will not link results to individuals or entities. Encourage interviewees and local partners to respond truthfully even if some answers may be perceived as negative.

A 1.1.6 Inclusion and Exclusion Criteria

As child rights was intended to be the core focus of the study, the following criteria were applied to the surveyed artisanal miners and children:

1. For artisanal miners, we only surveyed the ones who currently have children under the age of 18. All the data presented in the report about workers' children refer to the ones under the age of 18 even though the workers might have older children as well.
2. For children's surveys, we had the following selection criteria:
   - Under the age of 18 AND:
   - At least one parent is an artisanal miner AND/OR:
   - The child is an artisanal miner

A 1.1.7 Limitations and Challenges

COVID-19 pandemic

The original plan for the study was to complete it by the end of 2020. However, due to the COVID-19 pandemic, our research teams on the ground had to postpone the field assessments until early 2021.

Acquiring necessary permits for field assessments

Another major reason for the delay was getting the necessary permits from relevant authorities. To carry out any research activities at the ASM sites, permits are needed from various levels of the government authorities, from provincial to community level. Due to the sensitive nature of the study, the authorities at the local level were more reluctant to grant permission, and therefore, the process was delayed by a few more weeks.

Accessing female artisanal miners

As in most mines, the cooperatives only include diggers and as the women mostly engage in washing the ores, are excluded from the memberships. Therefore, even though the research team tried to include an equal number of female artisanal miners in all ASM communities, it proved to be difficult to reach them through the main channel used to access artisanal miners, which is through the management of the cooperatives.

A 1.2 Survey Sample Description

Unlike our regular worker surveys, which take place in factory settings where we randomly select a representative sample of workers from the list of employees, the selection of individual artisanal miners and children was very much dependent on their accessibility. Specifically: 1) willingness of the artisanal miners to accept the interview at the mining site, and 2) finding the artisanal mining families in the communities.

As shown in Table A1 below, we interviewed 116 artisanal miners and children during the Phase 1 field assessment and 300 in Phase 2.

	Phase 1			Phase 2		
	Female	Male	Total	Female	Male	Total
Parent artisanal miners	27	30	57	73	77	150
Children	19	40	59	71	79	150
Total	**46**	**70**	**116**	**144**	**156**	**300**

A 1.2.1 Basic Information of Respondents

a. Phase 1 Field Assessment

Parent artisanal miners

- In 40% of the interviewed families, both husband and wife work in ASM.
- 57 mining families have 210 children under the age of 18, averaging 3.7 per family.
- The average age of the parent is 34.3 years old.
- 87% live with their spouse.

Children

- 78% of interviewed children have at least one parent working in ASM. In 22% of the cases, both parents work in ASM. In another 22% of the cases, neither parent works in ASM but the children themselves work in ASM.
- Interviewed children have an average number of 3.6 siblings (including the ones over the age of 18).
- The average age of children interviewed is 13, with the youngest being 7 and the oldest being 17.
- Almost all children live with their parents unless one parent is deceased or parents are divorced (rare).
- Most children don't know their exact date of birth (or did not provide it) but know their age.

b. Phase 2 Field Assessment

Parent artisanal miners

- Interviewed parents have a median age of 39.5 ranging from 22 to 60.
- 85% of interviewed miners can at least read Swahili and 77% can read French, 96% have some school education.
- In 37% of the interviewed families, both husband and wife work in ASM.
- 83% of parents are currently married, almost all parents (99%) live with their children, but 17% are not living with their spouse.
- 150 mining families have 620 children under the age of 18, averaging 4.1 per family.
- Almost all (95%) respondents are from urban areas.

Children

- Interviewed children have a median age of 14.5, ranging from 11 years old to 17.
- Only two out of three (67%) children know their exact date of birth.
- Children have an average number of 5.3 siblings in total, and an average of 3.8 siblings under the age of 18.
- 88% of interviewed children have at least one parent working in ASM. In 21% of the cases, both parents work in ASM. Only in two cases (1%), neither parent works in the mine but the children themselves work in ASM.
- 31% of children migrated to their current location from a different location.

A 1.3 ASM Communities

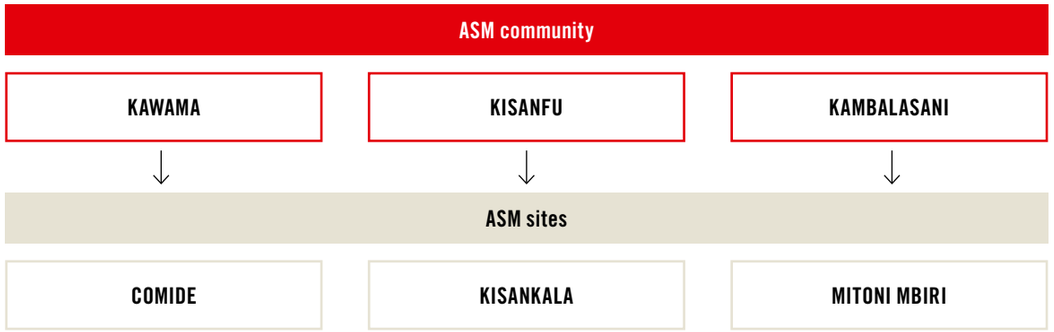
Figure A1 describes the ASM communities and mining sites/quarries located in the communities that are included in the Phase 1 field assessment.

Kawama:
- Mining village transformed into administratively recognised village
- 80 km from the rural town of Fungurume
- About 6500 active artisanal miners
- No cooperatives, workers were not organised
- Three primary schools and two secondary schools
- Active NGOs: IGDFT, LINAPDHO, AFREEWATCH
- Toilets are shared among at least 2–3 families
- Six out of 10 houses are in tarpaulins
- Drinking water is supplied from the river

Kisanfu:
- Mining village transformed into administratively recognised village
- 70 km from the rural town of Fungurume
- About 4500 active artisanal miners
- No cooperatives, workers were not organised
- Five primary schools, and four secondary schools
- Active NGOs: CARF, IGDFT and AFREEWATCH
- Toilets are shared among at least 2–3 families
- Six out of 10 houses are in tarpaulins
- Drinking water is supplied from the river and a few boreholes

Kambalasani:
- Not administratively recognised, but a customarily recognised village
- 140 km from the rural town of Fungurume
- About 1500 active artisanal miners
- No cooperatives, workers were not organised
- No primary or secondary schools nearby
- Active NGOs: CARF, IGDFT
- Toilets are shared among at least 2–3 families
- Eight out of 10 houses are in tarpaulins
- Drinking water from the river

Figure A 1: Phase 1 field assessment ASM communities and mining sites[44]



44 COMIDE is not an informal mine site but an official industrial mining site dealing with illegal ASM

Figure A2 describes the five ASM communities and the eight mining sites where the respondents of the Phase 2 quantitative survey are currently working.

Mutoshi is a Gécamines town with an artisanal exploitation site. At the time of the Phase 2 field assessment (June 2021), the Mutoshi project had concluded, and the mining company Chemaf had recovered its concession. But artisanal miners were still active at the site (informally). In addition to the quarry, there are other income-generating activities in Mutoshi such as small trade, and public transportation by vehicle or motorcycle. The neighbourhood is accessible by two main roads. There are private and public schools.

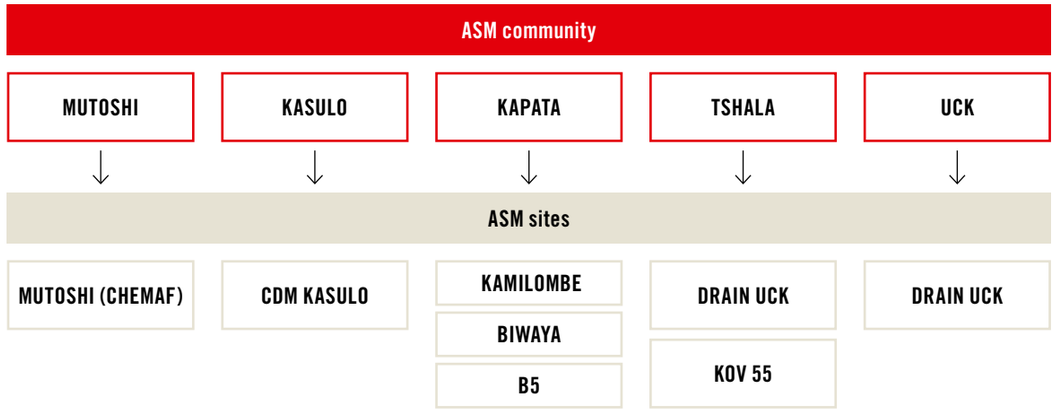
Kapata is a city of Gécamines with a market at the entrance to the city. The city is surrounded by large mining companies, an artisanal mining site and there are private and public primary and secondary schools. The KCC company is currently relocating the population that is next to its embankments. The city is accessible via a single asphalt road from the city centre.

Kasulo is a residential area. In the past, minerals were discovered in people's plots of land, and this is how the Kasulo quarry was born. Currently, the company CDM owns the artisanal site. The neighbourhood has a large market that supplies the population with basic necessities. There are also private and public schools

UCK is a city of Gécamines which welcomes people from many neighbouring communities for artisanal mining in the quarry. The population has grown in recent years. There is a non-functional market and the population prefers to sell in the street. The community has primary and secondary schools, both private and public. Water is a scarce commodity in the plots and the population obtains water from two wells drilled by two individuals.

Tshala is a city located not far from the national road and very close to the Luilu district where the KCC Company has a base (LMS). Its peculiarity is the presence of an ore buying/trading counter. The majority of the diggers who work in the UCK mining site come to sell their products at the trading counter of TSHALA. Artisanal miners from Tshala also go to UCK Drain to work. There are schools and a market.

Figure A 2: Phase 2 field assessment ASM communities and mining sites



Appendix 2: Study Implementors and Partners

Implementing Partners:

- **The Centre for Child Rights and Business**
  The Centre's mission is to improve the lives of children by working with companies to promote and respect children's rights in all their operations, with a particular focus on supply chains.

  The Centre offers global expertise, services, support, research and insights covering a broad range of child rights and business issues across multiple sectors and countries. Services cover child labour prevention and remediation, child rights risks assessments, support packages for young workers and other vulnerable groups, and a comprehensive set of services to create family-friendly workplaces in supply chains, including child friendly spaces and migrant parents training. The Centre's supply chain mapping and risk assessments help businesses understand where and how their supply chain-related operations impact children and provide concrete recommendations to manage risks.

  The Centre has a strong presence in countries across Asia, but also has staff and projects located in Africa, Australia, Europe and The Americas.

- **Innovative Hub for Research in Africa (IHfRA)**
  The Innovative Hub for Research in Africa is a laboratory that conducts surveys, studies, research and training across the African continent. Our multidisciplinary team of seasoned African experts, with extensive country experience and top-notch skills, is committed to producing quality data based on international standards for evidence-based policies and operational solutions. We provide insights on a myriad of sectors while taking into account cultural and geostrategic contexts as well as local markets' maturity.

- **Centre Arrupe pour la Recherche & Formation (CARF)**
  CARF was established in 2013 in Lubumbashi. Its mission is to promote a Christian vision of economic, socio-political and cultural development, especially in the circles of thought and social action in the DRC.

Other Organisations:

- **The Impact Facility**
  Initially set up by TDI Sustainability and Fairtrade Foundation, The Impact Facility takes a different approach – an inclusive business-led approach. We recruit donor finance and investment capital to fund well-researched and well-organised projects that are designed to improve mine productivity across the board. This, we believe, is the gateway to better working conditions and improved health and safety outcomes, both of which empower mining communities to break the cycle of poverty for good.

Appendix 3: EGC Standards

Entreprise Générale du Cobalt (EGC) was established by the Government of the Democratic Republic of the Congo (DRC) in November 2019. In March 2021, EGC officially launched its activities to support the commercialisation of responsibly sourced artisanal cobalt. EGC has also published its "Responsible Sourcing Standards" to define the operational principles that EGC will require to support the establishment of safe and strictly controlled artisanal cobalt mining zones (EGC 2021). The EGC standard has been proclaimed as being the first private company standard for responsible sourcing of artisanal cobalt. DRC's Agency for Regulation and Control of Strategic Mineral Substance Markets (ARECOMS) was simultaneously established by the DRC government end of 2019 to set and enforce a legal standard for the ASM sector. ARECOMS falls under the jurisdiction of the Ministry of Mines, and is the national legal body to monitor and issue certificates of conformity with national responsible mining standards.

The EGC Standard, which was developed following extensive collaboration with Trafigura and non-profit organisation Pact, amongst others, will be updated systematically to reflect evolving risks and stakeholder perspectives. The implementation of the EGC Standard on the ground will be supported by Pact through the capacity-building training of local stakeholders, including EGC and the mining cooperatives. The EGC Standard aligns with DRC law, the DRC mining regulations as well as the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (Trafigura 2021). According to Pact, the EGC Standards go beyond regulatory compliance and the implementation of the standards will be monitored and assessed by EGC and Trafigura, with support from Pact.

The EGC Standard sets out a series of standards for the following:

- **Miners:** These define the "golden rules" that all workers on EGC controlled artisanal and small-scale mining (ASM) cobalt sites must adhere to.
- **Cooperatives:** These define the governance and operational management requirements that EGC will place on cooperatives that are authorised to operate on ASM cobalt sites.
- **EGC:** These define the standards that EGC will hold itself to in its governance, management and oversight of the supply chain from mine through to processing plant.
- **Buyers:** These define the measures that the buyers agree to hold themselves to in relation to their role as purchaser of EGC-produced material and, where applicable, as a member of the EGC Technical Committee, to ensure the effective implementation of the EGC's Responsible Sourcing Standard (EGC 2021).

EGC is currently in the phase of developing its first site (IPIS 2021), however, according to BGR, EGC currently does not have the financial means and the technically necessary processing capacities to purchase the entire cobalt production and to ensure responsible artisanal mining on a broad scale. Due to the enormous scale of the ASM cobalt sector in the DRC, achieving formalisation of the entire sector will require more time and support. Article 8 of the Ministerial Decree on the Establishment of EGC (Ministry of Mines 2019) allows delegation or entering into local partnerships with other companies. This would allow other ASM buyers to be approved, which could bring in processing capacity and capital and thus relieve EGC of responsibility (BGR 2021).

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Women travel past the Tenke Fungurume mining site, Kolwezi.
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