

Cobalt Mining in the Democratic Republic of the Congo: Addressing Root Causes of Human Rights Abuses

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AND MANAGEMENT

February 2023

Contents

1. Introduction	2
2. Artisanal Mining in the DRC Is Critical for Meeting Projected Cobalt Demand	4
3. Formalization of Artisanal Mining at Mutoshi Improved Safety, Encouraged Female Participation, and Diminished Child Labor.....	6
4. The End of Formalization at Mutoshi has Harmed Miners and Their Families	8
5. Conclusion and Recommendations	11

About this paper

This white paper is based on a December 2022 visit to the Democratic Republic of the Congo (DRC) by Professor Dorothee Baumann-Pauly, the director of the [Geneva Center for Business and Human Rights](#) at the Geneva School for Economics and Management and research director of the [NYU Stern Center for Business and Human Rights](#). She is the author of this white paper, which is being published by the two centers. On this visit, she was accompanied by Michele Burlington, the chief of staff of the technology and corporate responsibility team of Microsoft; Luc Assosa, the DRC program director for [Pact](#), a non-governmental organization working on a wide range of developmental issues such as artisanal mining; and his colleague Raphael Mbaya Kamanga, deputy project manager. Logistics for this independent research trip were facilitated by the commodities firm Trafigura and financially supported by the Carol and Lawrence Zicklin Center for Business Ethics Research at the Wharton School of the University of Pennsylvania, where the author is a senior fellow.

All pictures in this white paper were taken by Dorothee Baumann-Pauly in December 2022.

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1. Introduction

The onset of the Covid-19 pandemic in early 2020 interrupted a unique experiment in “artisanal” mining for cobalt in the Democratic Republic of the Congo (DRC). A shutdown designed to limit the spread of the lethal virus truncated a promising pilot project at a site called Mutoshi in Lualaba province in the south of the DRC. At Mutoshi, artisanal small-scale mining (ASM) had been “formalized” in 2018, meaning that miners who extract the cobalt with basic tools got access to a mechanically prepared mine site with open pits where site-safety standards were implemented, among other measures.

A key element of formalization at Mutoshi was the full integration of women into artisanal mining. Generally, women have been prevented from mining in the DRC, in part because some men cling to a cultural myth that they bring bad luck. But this superstition diminished when directly addressed by training that accompanied formalization. The extra income women earned allowed families to pay for more of their children to attend school rather than toil in the mining area — an important way of reducing child labor.

In March 2020, however, formalization was suspended by the companies involved in mining at Mutoshi due to the Covid pandemic.¹ During a research visit to Mutoshi in December 2022, we learned that many of the formalization standards are no longer observed: Artisanal miners were no longer wearing protective equipment such as helmets, gloves, uniforms, and boots; many now work barefoot. The fence that once prevented unregistered miners from entering the mining site had disappeared, and relatively safe open mine pits had been replaced by about 150 poorly ventilated and unstable shafts that lead to deep vertical and long horizontal tunnels, which are far more hazardous. Mining accidents had become common again, with more than 15,000 miners, including children, coming to work at the site, instead of 5,000, according to the local miners’ cooperative.

The introduction and then shutdown of formalized ASM at Mutoshi created a unique research setting, one that allows analysis of the effects of requiring international labor standards on artisanal mining. Understanding the potential benefits of formalization is important because without it, ASM creates heightened safety risks compared to large-scale industrial mining, which extracts ore with heavy machinery.

Citing the heightened safety risks of non-formalized ASM, many companies that need cobalt for their products contractually try to exclude ASM-generated cobalt. But ASM is a business reality in the DRC, where it is estimated to contribute 15% to 30% of cobalt production. The DRC, in turn, provides over 70% of the cobalt used in rechargeable batteries worldwide. Cobalt is critical for battery safety and stability, ensuring that cathodes do not overheat or catch fire while also helping extend the life of batteries.

The Mutoshi formalization project was launched in January 2018 by a coalition that included agencies of the national and provincial DRC government; Chemaf, a Dubai-based mining company; Trafigura, a global commodity firm that purchases copper and cobalt from Chemaf; COMIAKOL, a Congolese mining cooperative active at the Mutoshi concession; and Pact, a nonprofit that specializes in making ASM safe, formal, and more productive.

James Nicholson, head of corporate responsibility at Trafigura, explained that “the Mutoshi pilot project was originally intended as a risk-mitigation exercise. Like many other concessions in the region, there were a considerable number of people dependent on ASM for their livelihoods within the boundaries of Chemaf’s concession. They had been there for decades. Rather than driving individuals away and potentially stoking conflict, it made far more sense from a human rights and commercial perspective to improve their working conditions and safely integrate production into the global value chain.”

The Mutoshi formalization project should be of interest to companies in need of cobalt, particularly manufacturers of consumer electronics and electric vehicles (EVs), which are responsible for the surge in

¹ Trafigura. (n.d.). Mutoshi Pilot Project. Retrieved January 10, 2023, from: <https://www.trafigura.com/sustainability/responsible-sourcing/mutoshi-pilot-project/>



An artisanal miner at Mutoshi peers up from the sort of hand-dug shaft that poses a risk of collapse.

global cobalt demand. That demand is projected to increase four-fold by 2030, even as many auto companies are already beginning to reduce the cobalt content in EV batteries. While companies using cobalt are looking for alternative sources of the mineral as well as substitutes, experts predict that cobalt demand will remain strong for years to come and that only the DRC has the resources and production capacity to meet the bulk of this demand.² The tech giant Microsoft uses cobalt in rechargeable batteries for smart devices. In a statement, the company said: “Microsoft is committed to responsible and ethical sourcing, a responsibility we take very seriously. We are continuing to work on this problem. It’s an issue that will take a coalition to solve.”

For most companies using cobalt, securing supplies that meet basic human rights standards has become a legal requirement. Recently enacted legislation in some European countries requires companies to assess their operations for potential human rights violations.³ Laws in [Germany](#) and

[France](#), as well as legislation proposed in several other European countries, require that companies enhance supply chain transparency all the way down to the acquisition of raw materials. They must take concrete steps to ensure their supply chains are free from human rights violations, including child labor. In December 2022, the EU released a new [regulation](#) that will replace the existing [Battery Directive](#) from 2006. This new regulation will require companies to source battery minerals “responsibly,” which includes conducting human rights due diligence across their entire value chain.⁴

This white paper reinforces the findings of a report released jointly in September 2020 by the NYU Stern Center for Business and Human Rights and the Geneva Center for Business and Human Rights as part of the World Economic Forum White Paper series. Titled [Making Mining Safe and Fair – Artisanal Cobalt Extraction in the Democratic Republic of the Congo](#), the report concluded that ASM operations are an integral part of cobalt mining in the DRC and that there is a growing need for formalization of artisanal mining. Formalization brings the revenue-generating activities of ASM into the formal sector by setting and enforcing basic human rights standards for the extraction process, and it offers a viable approach for addressing risks related to cobalt mining. The government of the DRC should play a central role in expanding the formalization process. Electronics companies and car manufacturers also need to prioritize formalization and collaborate with the DRC government, mine owners, local cooperatives, civil society organizations, and other governments to develop common standards and implementation strategies to protect miners, ensure mine safety, and prevent child labor. Our new findings, based on interviews with ASM miners and experts, as well as observations in the field, highlight that the integration of women in ASM formalization can alleviate the extreme poverty in mining communities, provide money for school fees, and diminish incentives for sending children to work in cobalt mines.

² Global demand for cobalt is also growing because of government requirements in Europe, China, and certain American states that gasoline-powered combustion automobiles be phased out over the next 10 to 15 years. Another factor contributing to rising demand is the spread of 5G mobile telephone technology, which requires 20% more cobalt than earlier 4G systems.

³ Human rights due diligence is becoming imperative for companies as an increasing number of nations are introducing corporate sustainability laws. The newly enacted German Supply Chain Due Diligence Act, for example, imposes human rights due diligence obligations not only on German companies of a certain size, but also non-German companies with a certain number of employees in the country. According to the act, companies are required to establish human rights risk-management systems to prevent and mitigate violations. Among the 11 human rights risks spelled out in the act, the prohibition of child labor is listed at the top.

⁴ European Commission. (2022, December 9). Green Deal: EU agrees new law on more sustainable and circular batteries to support EU’s energy transition and competitive industry. https://ec.europa.eu/commission/presscorner/detail/en/IP_22_7588

2. Artisanal Mining in The DRC is Critical for Meeting Projected Cobalt Demand

Many cobalt-consuming companies currently seek to avoid ASM cobalt out of concern about mine safety and child labor. These concerns were prominently identified as pressing human rights issues by Amnesty International in a report published in 2016.⁵ But given the central and integral role artisanal mining plays in the DRC cobalt supply, eschewing ASM amounts to a denial of market realities.

Artisanal mining provides a crucial supplement to large-scale industrial mining, which produces most of the world's cobalt. Congolese ASM accounts for over 10% of global cobalt production, which makes the ASM sector in the DRC the second-largest cobalt supplier in the world, followed by Russia at 6% and Australia at 5%.⁶

Powerful economic forces attract destitute people to mining in areas that lack other means of making a living. Artisanal mining occurs in proximity to large-scale industrial operations because ASM miners are drawn to corporate mining concessions with proven cobalt reserves. ASM provides employment to hundreds of thousands of miners in the DRC and feeds millions when miners' families are considered, according to Jean-Marie Tshizainga Sanama, the former Lualaba provincial minister of mines. In fact, ASM generates far more jobs in the DRC than large-scale mining, which relies heavily on machines rather than humans.

The Congolese government supports ASM and is in the process of setting up an agency, the *Entreprise Générale du Cobalt* (EGC), to oversee artisanal mining and the purchasing of domestically produced ASM cobalt ore prior to processing.⁷ Though the EGC was announced by the government in March 2021, it has been hampered by internal controversies which have prevented it from becoming operational for almost two years.

Artisanal and industrial mining are intertwined in the DRC. Apart from the huge number of people who flock to large-scale industrial mining sites to try to scrape out small amounts of the valuable mineral ore, it is virtually impossible to separate the flow of ASM cobalt from the larger supply of industrially mined cobalt. That is because cobalt extracted at ASM sites typically enters the general supply chain when it is combined with industrially mined cobalt at mineral refineries in the DRC and China.⁸

In light of these realities, global companies buying cobalt need to encourage the formalization and responsible extraction of the mineral rather than engaging in a futile attempt to avoid cobalt associated with ASM — an attempt that also ignores the sustenance that artisanal mining provides to millions of poor people.⁹

James Nicholson said that, “For too long, international discourse on ASM cobalt has centered on the problems, not the solutions (or opportunities) of formalizing the sector. International buyers and governments, among others, urgently need to come together to support the efforts of the DRC government, agree to commonly accepted standards and, ultimately, to commit to integrating responsibly sourced ASM product into the value chain. The developmental impact on the ground would (and should) be profound.”

⁵ Amnesty International. (2016). “This is what we die for”: Human Rights Abuses in the Democratic Republic of the Congo Power the Global Trade in Cobalt. <https://www.amnesty.org/en/documents/afr62/3183/2016/en/>

⁶ In 2019, the Organization for Economic Cooperation and Development published a report arguing that large-scale and artisanal mining are so intertwined that it does not make sense to draw a sharp line between them (Organisation for Economic Cooperation and Development. (2019)). Interconnected supply chains: a comprehensive look at due diligence challenges and opportunities sourcing cobalt and copper from the Democratic Republic of the Congo. <https://mneguidelines.oecd.org/interconnected-supply-chains-a-comprehensive-look-at-due-diligence-challenges-and-opportunities-sourcing-cobalt-and-copper-from-the-drc.htm>

⁷ *Entreprise Générale du Cobalt*. (2021, March 31). Official Launch of the *Entreprise Générale du Cobalt* in the Democratic Republic of the Congo. <https://www.egcobalt-rdc.com/official-launch-of-entreprise-generale-du-cobalt-in-the-democratic-republic-of-the-congo/>

⁸ Siddarth Kara's book entitled “Cobalt Red: How the Blood of the Congo Powers our Lives” (Macmillan 2023) concurs with our observation that ASM is an integral part of the cobalt supply chain.

⁹ The DRC government also has designated special sites, called Zone d'Exploitation Artisanale, to support the artisanal extraction of cobalt.

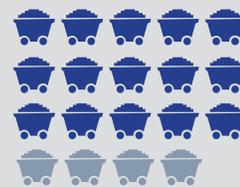
The Role of Chinese Companies in the Cobalt Supply Chain

Chinese mining companies dominate the cobalt supply chain, from extraction of the mineral at mine sites in the DRC to smelters and refiners. Fifteen of the 19 cobalt-producing industrial mines in the DRC were owned or financed by Chinese companies in 2020, according to *The New York Times*.¹⁰ Two-thirds of the world's cobalt is processed in China.¹¹

Chinese entrepreneurs have set up buying stations, also known as depots, close to the 30 cobalt ASM sites in Lualaba and Katanga.¹² At these buying stations, the quality of the ore is assessed, and a price is determined.

Miners in the DRC often question the reliability of the instrument that determines the quality of the ore as well as the fairness of advertised prices.¹³ In 2019, ASM miners at Kamilombe revolted against buyers from the Chinese company Congo Dongfang International Mining (CDM), saying they felt cheated. They destroyed CDM equipment, leaving burned excavation machines that are still visible today. During our visit to Kamilombe in December 2022, representatives of the local mining cooperative told us that they no longer sell their production to CDM, but new Chinese buyers have now taken over the depots. Miners said they still have no bargaining power over prices or the volumes they can sell.

At Mutoshi, miners similarly attributed lower incomes to the Chinese buyer active there. “At present, the price is imposed, you are not even able to discuss your own goods,” Varlene Kaj, a trader at Mutoshi, explained. “The Chinese impose the price of our products as they see fit, or as they wish. We want the situation to return as in the old days when we used to carry out our activities with Chemaf.” Kaj referred favorably to the period when formalization took place at Mutoshi, during which the mining firm Chemaf oversaw an arrangement allowing miners to sell their ore at prices they considered fair.



15 of the 19 industrial cobalt mines in the DRC were owned or financed by Chinese companies in 2020



Two-thirds of the world's cobalt is processed in China

¹⁰ Searcey, D., Forsythe, M., Lipton, E. & Gilbertson, A. (2021, December 7). A Power Struggle Over Cobalt Rattles the Clean Energy Revolution. *The New York Times*. <https://www.nytimes.com/2021/11/20/world/china-congo-cobalt.html>

¹¹ International Energy Agency. (n.d.). Mission: The IEA works with governments and industry to shape a secure and sustainable energy future for all. Retrieved January 10, 2023, from: <https://www.iea.org/data-and-statistics/charts/share-of-top-producing-countries-in-total-processing-of-selected-minerals-and-fossil-fuels-2019>

¹² Bundesanstalt für Geowissenschaften und Rohstoffe. (2021). Mining Conditions and Trading Networks in Artisanal Copper-Cobalt Supply Chains in the Democratic Republic of the Congo. https://www.bgr.bund.de/EN/Themen/Min_rohstoffe/Downloads/lieferketten_ab-baubedingungen_artisanaler_Cu-Co-Sektor_DR_Kongo_en.pdf?__blob=publicationFile&v=3

¹³ Nene Morisho and Francois Lenfant (2021): Socio-economic baseline study of Kasulo, Kolwezi, in the Democratic Republic of the Congo. <https://www.pactworld.org/library/socio-economic-baseline-study-kasulo-kolwezi-democratic-republic-congo>

3. Formalization of Artisanal Mining at Mutoshi Improved Safety, Encouraged Female Participation, and Diminished Child Labor

Safety improvements

Dangerous working conditions are a well-established risk associated with ASM cobalt mining in the DRC.¹⁴ The main safety hazard stems from the manual digging of narrow, deep shafts that are inadequately secured, poorly ventilated, and prone to collapse.

Key to the success of the Mutoshi formalization experiment from 2018 to early 2020 was the use of a semi-automated extraction method: The mine operator, Chemaf, used excavation machines to create shallow open pits where ASM workers could comb for cobalt ore. Extraction of cobalt from open pits significantly enhanced productivity and reduced the risk of severe mining accidents. (It also was expensive. Each round of creating open pits cost about \$50,000, and the process had to be repeated every six months.)

The formalization project improved miner safety in other ways, as well. A substantial security fence combined with use of special identity cards limited access to 5,000 registered miners per day. All miners who had worked at Mutoshi prior to formalization received an identity card. On average, only 3,500 miners worked on the site at any one time. The entry controls ensured that children, pregnant women, and those under the influence of alcohol were denied access. All miners were required to wear boots, uniforms, gloves, and helmets, which were provided by Chemaf. Miners we interviewed in September 2019 told us that the protective equipment did not inhibit their work and that they wore it with pride.

The array of safety steps achieved by formalization had a tangible effect. There is no safety record for the entire Chemaf concession, but according to the project partners there were over 3 million hours worked without a lost-time injury and no artisanal mine fatalities at the fenced Mutoshi pilot site during the roughly two years of the pilot project. Since the end of formalization in March 2020, there have been seven work-related deaths, most related to tunnel collapses.

During formalization, less severe accidents could be treated in a clinic, staffed by Chemaf with a doctor and nurse, which was set up on-site in a large shipping container stocked with basic wound dressings, disinfectants, and pain medications. Since the end of the pandemic, about 400 non-severe accidents have occurred at the Mutoshi site, according to COMIAKOL, the local cooperative, but medical treatment was no longer available.

Integration of women

Historically, superstition and gender bias have prevented most women from working on mining sites.¹⁵ Luc Assosa, the Kolwezi-born program director of the NGO Pact, explained that, according to traditional beliefs, the presence of women reduces the quality of cobalt ore or makes it disappear altogether. As a result, women generally have been limited to two peripheral roles: washing the ore to increase its purity and selling price and serving as “negotiants,” or small-scale traders, who support the mining teams with short-term finance for their operations. The negotiant role requires planning skills and the trust of the

¹⁴ Geneva Center for Business and Human Rights. (n.d.). Cobalt Knowledge Hub.: <https://gcbhr.org/focus/extractives/knowledge-hub>

¹⁵ Bundesanstalt für Geowissenschaften und Rohstoffe (2021). See note 12.



A mining cooperative at Mutoshi helped to overcome cultural superstitions so that women can now work side-by-side with men.

miners, which has meant that far fewer women qualified because they lacked experience with extraction. Both roles typically have been carried out at a distance from the mining site.

A benefit of formalization that has been largely overlooked by outside observers is that the process helped end the marginalization of women. At Mutoshi, women were invited to enroll in a training program — provided by COMIAKOL and sponsored by Chemaf and Trafigura — that addressed the traditional bias as unfounded. According to COMIAKOL's general manager, Ngombe Kingudi Sylvestre Petit-Petit, and Julie Kasongo, the leader of a women's association created by COMIAKOL, the training helped to convince male miners to allow women to work directly on extraction.

Initially, male miners agreed only to a trial period, but within a short time, they saw that the presence of women did not hurt production. To the contrary, the involvement of women increased cobalt production. Men continued to handle certain tasks because of their greater physical strength, but women became fully accepted as miners, often breaking down larger rocks extracted by men.

The women's association held its own weekly meetings, known as “Café Matinal,” during which Kasongo and other COMIAKOL leaders conducted awareness-raising sessions, offered technical mining advice, and discussed prevention of sexual violence. Mutoshi women we interviewed said that they felt safer when the mine site was fenced-off and entry was controlled. During the formalization project, no rape cases were reported to the cooperative.

Of the 60 miners and community members we interviewed in December 2022, more than half were women. Their praise for formalization was consistent and unequivocal: “Formalization was very good; everybody profited,” said negotiant Lydia Monga.

Elimination of child labor

Women miners told us in interviews that their integration into the extraction process played a major role in improving the lives of their children. The additional pay earned by women often doubled household income. The extra money typically helped cover the cost of schooling, meaning that children spent their days in classrooms, rather than on mining sites. “We mothers managed to earn enough money to support the education of our children,” Masengo Emerance, an ASM miner at Mutoshi, said.

While primary schools are free in the DRC, students' families have to pay for uniforms, books, and sometimes a small contribution for the teacher. Beginning at the age of 12, schools require families to pay fees for attendance. As a result, many adolescents stop going to school and instead join their parents and older siblings in trying to generate income. As many as 40,000 people under the age of 18 are estimated to be at work in copper and cobalt mining in the DRC.¹⁶

Prior to formalization, women and children were also exposed to greater health safety risks. For example, women washing the cobalt often brought their small children to work, and they did not wear

¹⁶ United States Department of Labor. (2022). Final Evaluation Combatting Child Labor in the Democratic Republic of the Congo's Cobalt Industry (COTECCO). <https://www.dol.gov/sites/dolgov/files/Gayar.Arwa.T%40dol.gov/DRC-CO-2.PDF>

rubber boots while standing in the water, even while pregnant. The water in which cobalt is washed contains potentially radioactive and cancer-causing particles and other pollutants that can, according to a study in 2020, cause birth defects and is unhealthy for small children.¹⁷ Formalization stopped children and pregnant women from coming to the mine site. COMIAKOL continues to enforce these rules, but rubber boots are no longer in use at Mutoshi because they have worn out and miners could not afford to replace them.

The Reach of The DRC's Cobalt Economy

In the Katanga region of the DRC, a center for cobalt mining, households typically have four people, according to official statistics.¹⁸ But miners and staff members with civil society groups told us in interviews that the households of artisanal miners are often at least twice as large. This suggests that, based on an estimate of more than 200,000 miners in the Lualaba province in Katanga, a total approaching two million people depend on artisanal mining for their survival.

That estimate does not include the many small businesses in mining communities that also rely on customers who earn their living in artisanal mines. Shop owners we interviewed in Mutoshi in December 2022 confirmed that almost all their revenue comes from families whose members work in the artisanal mines.

Annie Tshikwata Kawel, the owner of a small restaurant, said that during the short-lived formalization initiative, miners' income rose and, as a result, her restaurant flourished. Today, the artisanal miners stay away or buy meals on credit because they often do not have enough money to pay immediately.

4. The End of Formalization at Mutoshi Has Harmed Miners and Their Families

Chemaf, Trafigura, and the other partners in the formalization project ended the pilot in March 2020 in response to Covid-19. The pandemic threatened to severely tax the medical capacity of a country that generally struggles to provide basic healthcare to its more than 90 million citizens. Chemaf and Trafigura arranged for alternative means for local residents to earn money, including making facial masks, disinfectant, and soap. But these pursuits did not provide viable alternatives to mining, which continued, now largely unsupervised.

Safety precautions at the mine site rapidly broke down, we were told by COMIAKOL. Within a few months, miners could no longer reach cobalt ore by means of the shallow open pits dug for them with excavation machines by Chemaf, so they began digging deep mine shafts again. Some 150 shafts and tunnels existed when we visited in December 2022, according to COMIAKOL and Pact.

¹⁷ Kelly, A. (2022, October 19). Pollution causing birth defects in children of DRC cobalt miners – study. The Guardian. <https://www.theguardian.com/global-development/2020/may/06/pollution-causing-birth-defects-in-children-of-drc-cobalt-miners-study>

¹⁸ Global Data Lab. (s.d.). Area Database (v4.2): Average Household Size. <https://globaldatalab.org/areadata/table/hhsize/COD/>



Under formalization, this sign at the former entrance to the Mutoshi site barred pregnant women, minors under age 18, and workers carrying excessively heavy loads.

In the month of November 2022 alone, five men died in hand-dug mines, according to COMIAKOL. November is the beginning of the rainy season when cave-ins become more common. Still, it is striking that during the two years of the formalization project, there were no deaths at all. One ASM male miner we talked to at the entrance of a mine shaft said simply: “We now work in fear”.

SAEMAPE ([Service d’Assistance et d’Encadrement du Secteur Artisanale et à Petite Echelle](#)), the government agency that oversees artisanal mining activities, says that it offers its expertise to artisanal miners, but the government devotes no significant resources to addressing safety risks and does not keep comprehensive accident records.

Once formalization ended, artisanal miners removed the access fence, and the use of

identity cards ceased. Some 15,000 miners now work on the site — almost five times the number during formalization. As personal protective equipment wore out, it was not replaced. Lacking money for new boots, some miners work barefoot. The shipping container that once served as a clinic on site was abandoned, so injuries can no longer be treated.

Women miners showed us injuries to their hands and feet that could have been prevented by wearing gloves and boots. “We are now wearing pieces of ragged clothes and slippers in poor condition that do not protect us,” said Anna Beso. Another miner, who goes by the name Mama Restaurant, added: “We want things to go back to the way they used to be in terms of personal equipment, so that the work can be done properly.”

Women affected disproportionately

About 520 women are now working at the Mutoshi mine site, according to the cooperative. The end of the formalization period affected female miners disproportionately. While the belief that women bring bad luck did not resurface, the lack of access to cobalt ore via open pits made the continued integration of women more difficult. Production has fallen off, and family incomes have declined and are now as low as \$1.20 a day. As a result, children have returned to the mine site. One mother told us that all of her 10 children attended school during the relatively prosperous formalization period; now she said that she can afford to send only two while the others remain at home or roam the streets.

The cooperative estimated that about 300 children are coming to the site every day. In December 2022, we observed several groups of teenage boys at work. Some young children again accompany their parents because childcare facilities do not exist and not all parents can leave their children with other family members. Children as young as seven help transport cobalt ore or work at washing stations. Some older boys work in the tunnels extracting ore.

Kasongo, the leader of the Mutoshi women’s association, explained that most miners at Mutoshi have children at home but “for lack of money to pay for schooling, the children no longer study.” Parents, she added, must decide “between food for the children or for schooling.” Anna Beso, who works as a cobalt ore washer, said that her income depends on how much artisanal miners produce. During formalization, she added, even women washing ore could “support our families and the education of our children,” but now they are struggling to survive.

The end of formalization has also hurt miners in a subtle financial way. During the pilot program, Trafigura devised an exclusive “off-take” agreement under which ASM miners could sell cobalt ore directly to Chemaf, with full price transparency. In turn, the ore, when processed, was made available to international buyers that supported the project and were happy to receive the material on the basis of assurances from a third-party assessor. The relatively good relationship among the project partners provided some flexibility for the local mining cooperative to negotiate prices on behalf of the miners. Today, by contrast, Mutoshi miners can sell their cobalt production only at the price offered by the Chinese middleman firm active on the site. The middleman has no commercial connection to the concession holder, Chemaf, but operates on site. The Chinese firm then sells the ore to larger cobalt-processing companies in China. Miners no longer have the option to store ore at a depot until the price rises or they can negotiate a higher price.

Miners look back with regret at the end of formalization. Kamwanya Numbi said: “Formalization was a good practice and went very well...Everything worked very correctly. Nobody could complain. Everyone found himself in terms of profit.”

Not All ‘Formalization’ Projects Are Equal

Visits to two other ASM sites in Kolwezi revealed that different people mean different things when they refer to formalization.¹⁹ The other sites were in Kasulo, which we visited in September 2019, and Kamilombe, where we did research in December 2022. For several years, both ASM sites produced cobalt for the Chinese company Congo Dongfang International Mining (CDM), but now other Chinese buyers have taken over.

The main difference between this pair of sites and the one at Mutoshi is that during its formalization project, Mutoshi allowed only open pits with a maximum depth of 10 meters. At Kasulo and Kamilombe, by contrast, cobalt ore is extracted without any machinery. Instead, artisanal miners dig deep to reach the ore. Tunnel depth at Kasulo and Kamilombe is limited to 30 meters, in line with the Congolese Mining Code, but prior research has indicated that some tunnels appeared to be much deeper.²⁰ Miners also dig horizontally, often hundreds of meters, to follow the ore seam. Accidents in which miners are buried alive because of collapsing tunnels remain common.²¹

We also observed that at Kasulo, miners were not wearing the personal protective equipment that had been provided to them. Civil society representatives told us that a wall that had been erected to separate the community’s residential area from the mining site was easy to circumvent.

The differences between Mutoshi and other ASM sites demonstrate that cobalt-consuming companies, together with other stakeholders, need to clarify what ASM formalization means in concrete terms.

¹⁹ Other researchers have overlooked differences in formalization projects e.g: Calvão, F., Mcdonald, C. E. A. & Bolay, M. (2021). Cobalt mining and the corporate outsourcing of responsibility in the Democratic Republic of Congo. *The Extractive Industries and Society* 8(4). <https://doi.org/10.1016/j.exis.2021.02.004>

²⁰ Morisho, N. & Lenfant, F. (2021). Socio-economic baseline study of Kasulo, Kolwezi, in the Democratic Republic of the Congo. <https://www.pactworld.org/library/socio-economic-baseline-study-kasulo-kolwezi-democratic-republic-congo>

²¹ In-depth reporting on condition at Kasulo in: Niarchos, N. (2021, May 24). The Dark Side of Congo’s Cobalt Rush. *The New Yorker*. <https://www.newyorker.com/magazine/2021/05/31/the-dark-side-of-congos-cobalt-rush>

5. Conclusion and Recommendations

Though it was only in effect for about two years, the formalization of the ASM mine site at Mutoshi left a positive legacy.²² Most remarkable is the general acceptance of women in mining. Their participation led to a reduction in child labor and increased school attendance. The local cooperative, COMIAKOL, despite limited resources, still plays an active role seeking to enforce basic safety rules and tracking statistics. But without additional support and access to excavation machines, the cooperative cannot sustain the progress made during formalization. The women's association



Cobalt from artisanal mining activity in Kolwezi is brought to this buying station, also known as a depot.

remains central to the cooperative's activities and continues to meet on a weekly basis. The exceptional status of women at Mutoshi is the direct result of awareness-raising and training during the period of formalization, according to Assosa, the program director of Pact.

Our research strongly suggests that ASM formalization can contribute to a global energy transition that is not just green but also just. Experience at the Mutoshi pilot, as well as at the less successful formalization efforts at Kasulo and Kamilombe, indicate that two elements are most critical for formalization: the empowerment of women and the use of the semi-automated extraction method to improve safety.

We recommend the following to ensure that human rights are respected in all cobalt mining operations in the DRC:

1 Global cobalt buyers should acknowledge that ASM is an integral component of cobalt mining in the DRC.

It is not credible for any company to assert that it is limiting its purchases to cobalt produced in large industrial mine sites because the production gets combined with ASM cobalt during processing. Formal recognition of ASM mining also supports jobs for hundreds of thousands of people in an economically depressed region and advances broader development objectives in the DRC.

2 Formalization of ASM sites is vital to address the twin challenges of child labor and mine safety.

One important benefit of formalization would be the empowerment of women working on ASM sites. The integration of women increases household income and enables families to send their children to school instead of the mines.

²² This overall conclusion confirms Trafigura's socio-economic impact assessment of the Mutoshi project: Trafigura (s.d.). Mutoshi Socio-Economic Impact Report. Retrieved January 10, 2023, from <https://www.trafigura.com/sustainability/responsible-sourcing/mutoshi-socio-eco-nomic-impact-report/>

3 The empowerment of women requires strong leadership from local cooperatives.

Having cooperatives train female leaders is critical. Cooperatives can help break down cultural barriers to female participation in the extraction process and support creation of new childcare and educational options.

4 Once sites are formalized, companies in the battery supply chain, the DRC government, other governments, and other stakeholders need to come together to develop common standards on mine safety and child labor.

Only well-defined standards and adequate monitoring will make companies confident that sourcing cobalt from ASM sites can be integrated into their overall responsible-sourcing strategies. Measurable standards also help policymakers to assess whether human rights due diligence requirements have been met. The Entreprise Général du Cobalt has drafted responsible sourcing standards based on the short-lived formalization program at Mutoshi. This approach should serve as an important reference point for scaling ASM formalization.

5 Participants in the cobalt sector should promote open-pit extraction.

Relatively shallow open pits significantly reduce safety risks. This realization has prompted the EGC to rule out tunnels in its responsible sourcing standards. Beyond safety, the argument for open pits needs to be linked to the empowerment of female miners. At present, women are unable to fully participate in the extraction process because it is physically too strenuous for them to haul out large rocks containing cobalt from tunnels. So, even when the cultural superstition against women miners has been overcome, the use of tunnels limits their participation and reduces overall production and household income. These reductions are the most critical factors driving child labor.

6 The DRC government has an essential role to play in mandating formalization and helping to develop and apply practical standards on mine safety and child labor.

To the extent that the DRC government is not achieving these objectives, governments in countries where major global buyers are based need to engage diplomatically with the DRC government to support its enforcement of strong human rights standards. They also need to encourage global buyers to work together to support the formalization of ASM and the development of such common standards.

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