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> EXAMINING CHILD LABOR IN ARTISANAL AND SMALL-SCALE MINING IN THE DEMOCRATIC REPUBLIC OF THE CONGO, BURUNDI, AND SOUTH SUDAN



PRESENTED TO

United States Department of Labor, Bureau of International Labor Affairs

PRESENTED BY

Scott Boxer, Megan Prybyl, Emmaly Read, Barbara Taylor, and Sarkis Zoubian This report does not reflect the views or policies of the U.S. Department of Labor, nor does mention of trade names, commercial products, or organizations imply endorsement by the United States Government.

Cover Photo: Copper-cobalt/CuCo/2C ASM operations in Lualaba, Democratic Republic of the Congo. 2017. Photo credit: Afai Consulting BV.

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EXECUTIVE SUMMARY

This report presents the impact of the gold, cobalt, and coltan artisanal and smallscale mining (ASM) sectors on children in the Democratic Republic of the Congo, Burundi, and South Sudan. We analyze linkages between ASM and the recruitment or use of children for mining or illegal activities, indirect harms to children caused by ASM, and push factors that increase the likelihood of the worst forms of child labor in ASM in these countries. Sources and information for this report were collected primarily through desk research and interviews. Access to information directly relating to child labor in or around ASM mines in each country varied tremendously. However, our findings demonstrate evidence of the worst forms of child labor in all three countries.

In the Democratic Republic of the Congo, international and government regulations have gradually reduced the worst forms of child labor in and around ASM sites. However, sparse economic opportunities, presence of armed groups, and low education enrollment rates create conditions for child labor to flourish. Gaps in knowledge in supply chains and in-county situations in Burundi and South Sudan required us to extrapolate based on existing knowledge and propose areas of focus for gap research. Civil war and environmental degradation have destabilized South Sudan's economy, pushing its citizens towards ASM to meet their basic needs. Throughout all three countries, issues of social and economic development push children to work at and around ASM sites, exposing them directly and indirectly to harm.

Issues of regulation, government compliance, climate change, and international development regularly arose when examining the conditions that foster ASM and impede harm reduction. Regulations should focus on the comprehensive nature of ASM and on strengthening the formal job sector. Implementation fails when governments do not have the capacity to institute and monitor regulatory programs, or when corruption is rampant. Finally, insufficiently implemented development programs restrict the ability to disincentivize the participation or presence of children in and around mines and hamstring any attempts at addressing the health and environmental effects of mining.

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DEFINITIONS

ASM	Artisanal and Small-Scale Mining
Child Participation	Indicates a child or children are participating in the work of the mining. Their activities could vary from washing and transporting minerals to going underground to mine them.
Child Presence	Indicates a child or children are present in the mining site during working hours, possibly due to their parent's lack of childcare options. These children are not working in any form.
Conflict Minerals	Resources that are mined and used to influence and finance armed conflict, human rights abuses, and violence.
Countries of Focus (COF)	Democratic Republic of the Congo, Burundi, South Sudan
Definition of Child Labor[1]	 Is mentally, physically, socially or morally dangerous and harmful to children; and/or interferes with their schooling by: depriving them of the opportunity to attend school; obliging them to leave school prematurely; or requiring them to attempt to combine school attendance with excessively long and heavy work.
Green Minerals	Minerals which are critical to the transition to a green economy.

[1] ILO, "What is child labour?"

ILO Convention No. 138 on the Minimum Age	 Permits light work at age 12 or 13 Permits regular work at age 14 or 15 Hazardous work should be set at 18 (some exceptions)
ILO Convention No. 182 on the Worst Forms of Child Labor	 Forced labor (Use in armed conflict, debt bondage) Commercial sexual exploitation of children (CSEC) Illicit activities (particularly the production/trafficking of drugs) Hazardous work 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.
ITSCI	International Tin Association Supply Chain Initiative
LSM	Large-Scale Mining

Γ

II. INTRODUCTION

SCOPE OF WORK

Artisanal and small-scale mining (ASM) employs roughly 40 million people globally, including more than one million children. [2] Roughly 134 million people are indirectly impacted economically by ASM, with most of those people living in least developed or developing countries.[3] ASM accounts for 15 to 20% of global minerals and metals production, including 20% of the global gold and 26% of global tantalum (coltan).[4] ASM is important for the local communities and countries in which it occurs, and within the international supply chain. Therefore, it is crucial to research types of child exploitation, create due diligence processes for all phases of the supply chain, and monitor larger trends that may leave children vulnerable in and around the ASM sector. Our statement of work focuses on the linkages between the extractive industry and the recruitment and use of children for mining, commercial sexual exploitation, and other illicit activities. From our analysis we discovered larger trends of high importance that may indirectly affect the exploitation and development of children in and around ASM sites in the present and future, such as poverty, environmental degradation, climate change, resource disputes, and government capacity. We also discuss the impact COVID-19 has had on children in and around ASM in these three countries.

METHODOLOGY

Research began with an inquiry into countries in the vicinity of the Great Lakes Region of Africa, including Angola, the Central African Republic, the Democratic Republic of the Congo, Burundi, and South Sudan. This was accomplished by researching government reports and contemporary news stories and briefings related to mining, mineral extraction, and armed conflict. At the same time, key minerals were chosen due to their increasing relevance in the "green economy" (cobalt, coltan) and economic importance (gold). We then narrowed this selection down to three countries of focus (COF)—the Democratic Republic of the Congo (DRC), Burundi, and South Sudan—due to their proximity to one another, presence of similar mineral resources, and novelty of study.

We conducted qualitative desk research on governmental, NGO, and academic literature including journal articles, press releases, and government reports, and analyzed trends from prevalent ASM countries and compared them with our COFs. To help fill gaps in our research we conducted qualitative, open-ended interviews. We reached out to over 25 people related in some capacity to ASM within our COFs and held 19 interviews over the span of two and a half weeks. Our interviewees included journalists, aid workers, academics, government officials, and private sector experts aged 30 to 50. Both male and female, they included American, European, Australian, African, and Asian people. Each interview lasted about one hour, and we asked each interviewee a series of standard questions developed with the assistance of partners at the Bureau of International Labor Affairs (reference Appendix 2). Depending on the scope of the interviewee's knowledge and experience, we individually tailored follow-up questions to uncover information we did not discover within our desk research. We collected our qualitative data by transcriptions, either electronically or manually, and by video recordings.

III. ARTISANAL AND SMALL-SCALE MINING: OVERVIEW OF MINERALS AND HOW MINING IMPACTS CHILDREN

OVERVIEW OF MINERALS



Photo shows a teenage boy holding up coppercobalt/CuCo/2C in Lualaba, DRC. 2017. Photo credit: Afai Consulting BV.

Over half of the world's cobalt reserves are found on the African continent.[5] The majority of cobalt production takes place in the DRC. After their contribution (70%) to global manufacturing, the next nine countries produce less than 3% each.[6] Cobalt's primary use globally is rechargeable battery electrodes, among other uses.[7] With the growth of the green economy, global demand for cobalt is expected to rise in the coming years.[8]

Mainly produced in the DRC, coltan is the raw material from which tantalum is extracted.[9] Information gathered by a 2020 IPIS report states DRC coltan miners earn about USD\$19-26 weekly depending on variables such as their gender, mining role, or mining site.[10]

Coltan is critical to produce tantalum capacitors and microchips, which are used in many electronic devices.

[5] Shedd, Kim, "Cobalt, 2017" 19.1
[6] NS Energy staff, "Profiling the world's eight largest cobalt-producing countries."
[7] USGS, "Cobalt Statistics and Information."
[8] Mining, "Cobalt Prices."
[9] Schutte and Naher, "Tantalum Supply," 2.
[10] de Brier, How much does a miner earn?, 21

Gold is found naturally all over the world. It is also used in a variety of items such as electronics, dental supplies, and jewelry.[11] In the ASM communities of the countries of focus, gold mining is highly lucrative. One ounce of gold sells for around USD\$2,000 and miners in the DRC can earn between USD\$25 and USD\$200 per week.[12] With this market price and domestic laws that do not incentivize legal mining for the average person, gold becomes the most difficult mineral to track and control in Africa.

Cobalt and coltan are both considered critical minerals by the United States government due to their importance to key technologies and markets. Both gold and coltan are considered "conflict minerals," resources whose mining, smuggling, and marketing can be used to influence and fund conflict actors.[13] However, this label was contested by some of the experts with whom we spoke, like Belgian analyst Guillaume de Brier, who contend that the label is too pejorative and inaccurate. These experts instead advocate for using more nuanced terminology that does not connect all products sourced from these countries as directly fueling conflict.[14]

Cobalt, coltan, and gold are in high demand and are expected to remain that way for the foreseeable future. Therefore, they will have a significant impact on children's lives and their communities within the DRC, Burundi, and South Sudan. This report will contribute to the global discussion of artisanal and small-scale mining by providing the most recent developments in the markets of the COFs.

According to Cristina Villegas of PACT, children often start mining with their families from a young age. In many artisanal and small-scale mining communities, mining is the main source of income, and everyone in the family has a role to play.[15] The largest percentage of children who participate in mining perform supporting roles alongside family members. The second largest group are teenagers who may have young children of their own or work independently.

^[11] Gold Traders, "What is gold used for?"

^[12] Geenen, Stoop and Verpoorten, "Artisanal Gold Mining Pays."

Photo shows a teenage boy holding up copper-cobalt/CuCo/2C in Lualaba, DRC. 2017. Photo credit: Afai Consulting BV. [13] RMI, "What are conflict minerals?"

^[14] Guillaume de Brier (IPIS), interview with the authors, March 2, 2022.

^[15] Cristina Villegas (PACT), interview with the authors, April 16, 2022.

The final group of children are those who are under the 'care' of a third-party adult. A third-party adult is considered a relative other than the parent(s) who acts as guardian to the child or someone unrelated who is utilizing the child for profit.[16] Similar situations may also result from families going through divorce, remarriage, or the death of one or both parents. These situations may leave children either in the care of an elderly relative who cannot provide for them on their own or living with a stepparent who is not interested in caring for, or is actively abusing them, forcing the children to flee.[17]

LABOR

The international definition of minimum age requirements for child labor allows for light work at age 12 or 13, regular work at age 14 or 15, and hazardous work at 18 (with some exceptions).[18] The international definition of child labor, which relates to all ages defined, is labor that is mentally, physically, socially, or morally dangerous and harmful to children and/or interferes with their schooling.[19] The worst forms of child labor is any labor of children under 18 which is forced through armed conflict or debt bondage which includes commercial sexual exploitation, illicit activities (particularly in the production and/or trafficking of drugs), and/or hazardous work.[20] The types of child labor in and around ASM mentioned in this report are all classified under the definition of worst forms of child labor.

In ASM in the Democratic Republic of the Congo, Burundi, and South Sudan children, both boys and girls, often occupy supportive roles at the mines, including light surface level digging, crushing and washing minerals, selling goods at the site for miners, transporting materials and water, or watching younger siblings for parents.[21] Older teenage boys are usually the sole child group engaged in digging within tunnels or operating machinery. In the worst situations, young children may be asked to go underground because of their size, or they may be exposed to chemicals by workers who are separating the minerals from the ore. According to some surveys, "approximately 50 percent of respondents report that children over the age of seven work eight or more hours, and children's workdays lengthen with their age. By the age of 15 to 17, 78 percent of community members surveyed believe that children worked more than eight hours a day."[22] Children may work because they cannot afford to go to school or because the school is closed for various reasons. Some children will work to earn just enough money for tuition or for other basic family needs, while others regularly work at the mines like adults.

^[18] ILO, "Minimum Age Convention."

^[19] ILO, "What is child labour?"

^[20] ILO, "Worst Forms of Child Labor Convention."

^[21] Hahn et. al, Breaking the Chain, 20.

^[22] Hahn et. al, Breaking the Chain, 4.

DIRECT VIOLENCE AND PHYSICAL HARM

The likelihood of physical harm to children is one of the most readily apparent dangers involved in worst forms of child labor in and around mining sites. These physical risks extend beyond the typical image of forced work occurring at gunpoint, and include the threat of mines collapsing, toxic gas or chemicals, physical strain from continued work, as well as peripheral dangers found in mining camps e.g., criminality, consumption of alcohol and drugs, and suicide. Both boys and girls suffer from physical and psychological violence at ASM sites, though performing different jobs: boys working as diggers and gatherers, girls working as washers, and both as porters.[23]

Across the regions in question, there is little evidence of systemic, explicitly forced child labor driven by armed groups in relation to ASM, [24] though this may be a result of the lack of comprehensive studies focused solely on the issue of child labor. [25] This claim is corroborated by an OECD study which notes the presence of children at dozens of sites but without a "full picture of the extent of their engagement in the worst forms of child labour [sic]," having not studied this as part of their conflict mapping.[26] As an example of this, the UN DRC Sanctions Committee Group of Experts neglected to mention forced ASM-related child labor in its reports through 2021 despite in-depth discussions of child recruitment and soldiery.[27] More often than the presence and actions of militants, forced child labor in each of the COFs is a product of debt bondage and debt-based coercion to other individuals in ASM communities[28]. This is not to say that there are not worst forms of child labor or systemic recruitment of children into militias and armed forces, including the Armed Forces of the Democratic Republic of the Congo (FARDC), [29] various Mai-Mai groups, [30] and others; but that their relationship is often assumed, rather than explicitly noted.

[23] Schwartz et al., "A review of health issues related to child labor," 7, 9.

^[24] Tsurukawa et al., "Social impacts of artisanal cobalt mining," 2.

^[25] Parmar & Lebrat, 2019 (3)

^[26] OECD, Mineral Supply Chains and Conflict Links, 34.

^[27] UN Security Council Group of Experts https://www.un.org/securitycouncil/sanctions/1533/panel-of-experts/expertreports; UN Security Council Group of Experts, "Group of Experts on the Democratic Republic of the Congo," 20. [28] U.S. Department of State "Trafficking in Persons Report: Democratic Republic of the Congo"; "South Sudan"; and "Burundi".

^[29] Rakisits, "Child Soldiers," 114-115.

^[30] DOS, 2020 Country Reports on Human Rights DRC.

In one framing, section 1502 of the U.S. Dodd-Frank Act may have altered this paradigm of forced labor by instituting a boycott on minerals from certain regions in the DRC (Maniema, North Kivu, South Kivu), resulting in militias engaging in banditry rather than 'taxing' and overseeing 3T mining sites.[31] While child soldiery is still a persistent issue, this may result in the exaggeration of the perceived threat of militancy when juxtaposed with other risks to children associated with ASM.

Many current safety standards are viewed through the lens of adulthood. However, children are not only more vulnerable to the physical harm that accompanies manual labor in ASM due to their (generally) smaller stature, but due to their ongoing development as well. With 15-20% of an individual's total height acquired between the ages of 10 to 20, and in rapid growth spurts, the repetitive hard labor that accompanies mining is likely to induce physical damage to bones, muscles, ligaments; stunting; and other lifelong deformities and disabilities in children.[32] Along with this, feigning experience or following instruction without fully understanding may put children at risk of physical harm due to inexperience.[33] The ILO additionally states that "[i]nformal mining areas are notorious for violence, prostitution, drug-use (especially of alcohol), and crime."[34] Aside from the physiological harm of alcohol consumption, alcohol also lures minors into ASM work as an indicator of "easy cash" as a World Bank funded report claims, "kids will have that sentiment to go into the quarry because they see people with beer, drugs, and money."[35] Psychosocial trauma, alcohol abuse, and other factors may also lead to heightened incidences of selfinflicted violence, predominantly suicide, as noted in one study on gold miners and their children in South Africa.[36]

^[31] Parker and Vadheim, "Resource cursed or policy cursed?" 5, 15-16, 45.

^[32] IPEC, Children in Hazardous Work, 14.

^[33] Ibid, 15.

^[34] ILO, "Minors out of mining," 14.

^[35] Perks et al., "Resources and Resourcefulness," 21.

^[36] Meel, "Poverty and Non-Natural Deaths," 104.

Lastly, exposure to chemical and mineral byproducts in and around ASM sites can inflict both long- and short-term physical harm. Like physical labor, children's smaller sizes and developmental stages make them far more vulnerable to these factors than adults, though little attention has been given to the issue. The substantial amounts of mercury present in ASM pose a considerable risk to the health of minors, with the United Nations Industrial Development Organization (UNIDO) guidelines on mercury in ASM stating that no pregnant women or children should be allowed to "enter the structure, facility or locale [bold emphasis ours] in which mercury is being used."[37] As part of gold processing, mercury vapors are released into the atmosphere, making this guideline particularly difficult to follow. Other studies have linked mercury to heightened levels of violence and suicide in ASM gold mining in Colombia.[38] Other forms of chemical and ecological harm on children will be discussed in the following section.

ILLICIT ACTIVITY

There are other ways children may participate in illicit activities besides working directly in ASM. First, children may be coerced into smuggling raw materials from one point of contact to the next in the supply chain. Second, they may be tasked with watching for approaching government inspectors and petty theft of materials by ASM workers. Lastly, they may be involved, either on their own or as part of a larger group, in breaking and entering into guarded industrial mining concessions, which puts them at risk of encountering the corporation's armed guards. However, due to the nature of the work, it is almost impossible to gather accurate data on the illicit activities that children are involved in. Anecdotal and field interview evidence can begin to depict the breadth and depth of children's participation in these activities.

SEXUAL EXPLOITATION

Statistical data on the commercial sexual exploitation of children (CSEC) is lacking. Even so, it is known that many teenage girls work in prostitution to provide for their families. A secondary economy dependent on child labor is built around sexual slavery and domestic work. A 2020 report from the U.S. Department of Labor (DOL) shows that children living in the eastern DRC, in and around the twin Kivu provinces, endure "recruitment by non-state armed groups... and prostitution."[39] Interviews conducted by Cheruga, Lion, and Canavera in the Congolese mining hub of Kolwezi pointed to the presence of bars and hotels near the male-dominated quarries, forming a hotbed for sexual exploitation.[40] Additionally, children under the care of a third party adult may be more vulnerable to sexual exploitation and rape.[41]

SOCIO-ECONOMIC FACTORS

Artisanal and small-scale mining also damages the social and economic conditions in which children live. Although this may not be as visible as more direct violence, the presence of the worst forms of child labor in ASM is already a signifier of socioeconomic turmoil. The ILO highlights working in and around mines as a particular risk which can "be morally and psychologically hazardous" to children alongside previously mentioned instances of physical harm.[42] The distance of some mining sites from major metropolitan centers or authorities with the ability to regulate some aspect of the ASM processes is a key enabler of this "moral and psychological element." Numerous sources mention the general dissolution of such mining camps, including squalid conditions, [43] forms of verbal and physical abuse directed at children, [44] alcohol and substance abuse, [45] and the presence of criminality stemming from the sex trade.[46] While the unrest in the DRC's "lawless" eastern provinces is well known and has been extensively written on, it is also important to note that roughly 85% of Burundi's population is rural-living[47] and South Sudan's is approximately 80%,[48] in stark contrast to the DRC's roughly 47-53% urban/rural divide.[49] Although attention has been given to these places in the DRC, and in similar areas around the world, these large rural populations in both South Sudan and Burundi are the subject of few reports and little literature, creating potentially large exploitative spaces where children interact and are involved with ASM communities. Parent and guardian actions influence their children's socio-economic wellbeing.

Men working in ASM attempt to retain a "sense of individual achievement" which includes supporting families.[50] However, a "generalized lack of formal employment" and difficult conditions render solvent miners prone to use money on drugs, alcohol, and prostitution, further cementing a dissolute atmosphere and putting children at risk materially and medically.[51]

[43] Hayes and Perks, "Women in the artisanal and small-scale mining sector," 532.

[48] Mayai, "The Economic Impacts of Covid-19," 11.

^[42] ILO, Child Labor in Mining and Global Supply Chains, 3.

^[44] ILO, Child Labor in Mining and Global Supply Chains, 3.

^[45] Perks et al, "Resources and Resourcefulness," 225.

^[46] Ibid, 216.

^[47] CIA World Factbook, "Burundi."

^[49] CIA World Factbook, "Democratic Republic of the Congo."

^[50] Cuvelier, "Men Mines and Masculinities," 29.

^[51] Bryceson & Geenen, "Artisanal Frontier Mining of Gold," 310-311.

A recent report on a savings and credit program among miners in the DRC highlights that payment for medical care was the number one purpose of savings for both men and women, with paying children's school fees a close second.[52]

Women engaged in the sex trade around ASM and in ASM itself rarely have money to pay for medical treatment for their children and may wait until problems become severe before seeking treatment.[53] Though these may not be primary problems, the economic instability around ASM at times renders parents unable to fully provide for their children, and this magnifies other risks. This is further compounded by the prevalence of mothers bringing children to mining sites due to the lack of local schooling or its expense.[54] In many cases, schooling is not a panacea to child participation in ASM, as students continue, or enter mining, to pay school fees for things like uniforms or materials,[55] or to support family members.[56]

On a wider scale, ASM replacing traditional income-generating activities (primarily agriculture) also creates a unique set of risks and opportunities around children's roles in ASM. In the DRC, South Sudan, and Burundi, local agriculture has declined due to its dependence on crumbling infrastructure, vulnerability to conflict, and climate change. This shift has resulted in a move toward ASM due to its easily concealable, immediate, cash-in-hand work requiring little specialized knowledge. [57] ASM has damaged traditional agricultural lands in some regions, causing it to lose all agricultural viability.[58] Apart from the environmental effects, such processes render communities less autonomous and damage their long-term prospects and self-sufficiency in favor of short-term gains. Other regional studies corroborate this trend of diminishing agriculture in favor of ASM.[59]

^[52] Reichel, "Financial inclusion for women and men," 417.

^[53] Kelly, King-Close and Perks, "Resources and Resourcefulness," 96.

^[54] Hayes and Perks, "Women in the artisanal and small-scale mining sector," 535.

^[55] Maconachie and Hilson, "Re-thinking the child labor 'problem," 140.

^[56] Hilson and Garforth, "Agricultural poverty," 458.

^[57] Harvard Humanitarian Initiative, "Resources and Resourcefulness," 12.

^[58] Ladu, Athiba and Demetry, "Environmental Impacts of Gold Mining," 8-9.

^[59] Ouma, Ting and Pesha, "Analysis of the Socio-Economic Factors," 71, 74; Hilson and Garforth,

[&]quot;Agricultural poverty," 435; McQuilken and Hilson, Artisanal and small-scale gold mining in Ghana, 13.

ENVIRONMENTAL DEGRADATION

Like the physical toll on children in and around mining sites, the widespread effects of ecological degradation and contamination are magnified among minors for several reasons. As they develop, infants and young children consume several times more food, water, and air per pound than adults, putting them at much greater risk of ingesting environmental toxins.[60] Their earlier exposure to these harmful substances also increases the likelihood of developing long-term, chronic conditions. Maternal exposure to polluted environments may result in accumulation of heavy metals in the womb, which severely impacts fetal development.[61] Exposure to lead causes "persistent and deleterious effects" including lowered intelligence, behavioral problems, and complications with the central nervous system in children, and at levels lower than in adults.[62] Mercury is equally toxic to children and comparably damaging to the central nervous system, kidneys, etc.[63] These elements are significant because, along with arsenic, cadmium, zinc, nickel, and other metals, lead and mercury are found in and around sites as a component of "mine tails" and used in processing gold, respectively.[64] ASM itself is the largest source of air and water mercury pollution, and in totality is the second-largest source of mercury into the environment after coal combustion.[65]

The northern areas of Lake Tanganyika, which straddles the DRC, Burundi, and Tanzania, have high levels of mercury which can be attributed to gold processing in the region. These levels are higher than the WHO guidelines for methylmercury consumption and have been found in fish species commonly consumed by pregnant women and young children.[66] Lead is the second-most common toxicant identified in children as a byproduct of gold ASM across a wide range of countries.[67] Data on the presence of these and other heavy metals and their effects on children in the DRC, South Sudan, and Burundi is currently lacking.

^[60] Landrigan and Garg, "Children are not little adults," 4.

^[61] Faustman et al., "Mechanisms underlying Children's susceptibility to environmental toxicants," 18.

^[62] Murata et al., "Lead toxicity,"12.

^[63] Counter and Buchanan, "Mercury exposure in children," 209.

^[64] Fashola, Ngola-Jeme and Babalola, "Heavy metal pollution from gold mines," 4.

^[65] Telmer and Stapper, Reducing Mercury Use in Artisanal and Small-Scale Gold Mining, 9.

^[66] IPCS, Environmental Health Criteria 101, 100.

^[67] Allan-Blitz, Goldfine and Erickson, "Environmental and health risks posed to children by artisanal

Other studies highlight the high levels of cobalt in the blood and urine of children around ASM sites in the DRC and make specific recommendations to monitor these children for the possibility of health complications including cancer.[68] Data on the presence of heavy metals and their effects on children in the DRC, South Sudan, and Burundi is currently lacking.

On balance, the range of intellectual disabilities, deformities, and neurological and physiological issues in children caused by ASM has the potential to create a far larger population of individuals who are more easily exploited and have a more difficult time integrating into work and society in the future. The impact of this is not currently well understood but may soon become pertinent as both "green" minerals and gold become more popular means of economic subsistence across the regions.

EXISTING REGULATIONS AND THEIR EFFECTS

Section 1502 of the U.S. Dodd Frank Act and the EU Conflict Minerals Regulations are the reigning international regulations governing supply chains and mineral markets.[69] Both require companies to map their supply chains, assess and mitigate risks, and disclose their efforts publicly. However, the EU's regulations only apply to 3TG (tin, tungsten, tantalum and gold) importers, "leaving manufacturers, importers, and sellers of finished products and components that contain 3TGs out of scope."[70] Following the lead of the U.S. Dodd Frank Act, the United Nations unanimously passed their Guiding Principles for Business and Human Rights in 2011.[71] These principles encourage businesses to use risk-based due diligence to counteract the potential for direct or indirect harm to children caused by their practices.

The international community endorses the OECD's Due Diligence Guidance, which sets the highest standards for responsible tracing.[72] Additionally, the Responsible Business Alliance has created their own standard program called the Responsible Minerals Initiative.[73] Under this initiative, they created the Global Responsible Sourcing, Due Diligence Standard for Mineral Supply Chain, All Minerals in 2022, which focuses on establishing operational and procedural standards for companies in sourcing minerals from "conflict-affected and high-risk areas (CAHRAs), and, where relevant, artisanal and small-scale mining (ASM) producers."[74]

These regulations can cause unintentional harm to artisanal and small scale miners when businesses begin to enact due diligence, as was the case after the passage of the U.S. Dodd Frank Act. It is difficult to carry out inspections due to variables like mine location or the mobility of miners, who may migrate to a new site before the data reaches the company. Because real-time data is almost impossible to secure, some companies may choose to abandon a country completely instead of attempting to work through their due diligence challenges. Ultimately this mainly hurts the local miners who lose their income as a result.

^[69] OECD, Mineral Supply Chains and the US Dodd Frank Act; Cherepanova, "EU Conflict Minerals Regulations."

^[70] Cherepanova, "EU Conflict Minerals Regulation."

^[71] OHCHR, Guiding Principles on Business and Human Rights.

^[72] OECD, Due Diligence Guidance.

^[73] Responsible Minerals Initiative.

^[74] RMI, "Responsible Minerals Assurance Process," 3.

IV. COUNTRY CASE STUDIES

DEMOCRATIC REPUBLIC OF THE CONGO



Map of the Democratic Republic of the Congo

HISTORY

Mineral exploitation in the Democratic Republic of the Congo traces its origins to the Congo Free State owned in a personal union by Leopold II of Belgium (1885-1908) and the successive colonial administrations of the Belgian Congo (1908-1960).[75] One of the most important minerals during this early extractive period was copper, which British and Belgian business leaders aimed to extract from the Katanga province with the creation of the Union Miniere du Haut Katanga (UMHK) in 1906.[76]

Rapid interwar industrialization of Katanga required labor conscription, and local authorities began to compel women and children into unpaid communal labor brigades during the 1920s.[77] However, after this period and the localized forced labor, concessionary companies (including the UMHK) began investing in schooling of indigenous workers' children for the purposes of sourcing local skilled labor to save on the costs of white recruitment.[78] This practice continued until decolonization in the 1960s.

- [76] Gann, The Rulers of Belgian Africa, 143.
- [77] Seibert, "More continuity than change?" 378.

^[75] Hayes and Perks, "Women in the artisanal and small-scale mining sector," 254.

^[78] Juif, "Mining, Paternalism and the Spread of Education in the Congo since 1920," 6.

Produced as a byproduct of copper mining, cobalt was discovered in Katanga in 1914, and extraction began in the 1920s. The region quickly became the world's foremost producer of the mineral, a position it continues to maintain.[79] Previously limited largely to industrial use, the demand for Congo's cobalt skyrocketed after the invention of the lithium-ion battery in 1991 and was recently declared a "strategic mineral" by former president Joseph Kabila.[80] Concurrently, due to the increasing prevalence of mobile phones and other personal electronics, coltan became an important resource and a conflict mineral in the First and Second Congo Wars, when local and foreign militias exploited it to fund their operations.[81] Its continued relevance to militia groups resulted in Section 1502 of the 2010 Dodd-Frank Act, requiring U.S. companies to perform due-diligence checks on Congolese (and Congolese-adjacent) sourced minerals.[82] Despite an official decree by the country's Ministry of Mining in 2012 requiring all companies to adhere to OECD due diligence standards,[83] extralegal use as a conflict mineral by Mai-Mai militias continues as does exploitation of children in its production.[84]

[79] Dennis, Metallurgy: 1863-1963, 255.

^[80] Reuters, "Cobalt to be declared a strategic mineral in Congo."

^[81] Kassem et al., "Final report of the Panel of Experts," 15-16, 21.

^[82] Dodd-Frank Wall Street Reform and Consumer Protection Act, 839.

^[83] Journal Officiel de la RDC, "Ministerial Order No. 0057."

^[84] Lopez et al., "Trafficking of Coltan in the Democratic Republic of the Congo," 10.

COBALT AND COLTAN

Due to their strategic importance and prevalence in the DRC, cobalt and coltan, among many other minerals, have resulted in large and competitive industrial sectors in the country. It is estimated that the DRC produced 71% of the world's supply of cobalt in 2021, with an additional 48% in reserves.[85] 15-30% of the DRC's cobalt extraction is in the artisanal sector.[86] Given that the DRC supplies up to 71% of the world's cobalt supply, this means that between roughly 10.5% and 21% of the world's cobalt is supplied by Congolese artisanal miners. In the coltan sector, the eastern provinces of North and South Kivu alone hold 60% of the world's coltan reserves and are responsible for 40% of global coltan production.[87] However, how this is divided between the formalized and informal ASM sectors is unclear. Child participation in ASM flourishes in the shadows of the informal sector, away from government and private sector regulators, where an estimated 40,000 Congolese children and teenagers from vulnerable life situations work in and around mines.[88]

The Congolese government and other actors have made several attempts at formalizing the ASM sector. One is through the use of artisanal exploitation zones (ZEAs). These zones, established in the 2003 mining code (later amended in 2018), act as permits for non-mechanized activities by independent miners. The mining code states that "it is illegal to exploit and trade in mineral products from a site reported to be in contravention of the laws on the protection of... rights of the child."[89] The ZEA program, therefore, requires that all miners must be licensed adults. The program and mining code also intend to provide other layers of safety, including geological and engineering certification, improving safety for workers and all those around the mine, especially children.[90] However, these efforts are lacking. Sovacool notes a severe lack of labor inspectors in key mining regions of the country, and Cristina Duranti, director of the Good Shepherd International Foundation, pointed out that government and private sector efforts to advance the ZEA permitting process have become "stuck."[91]

^[85] Deberdt, "The DRC's response to artisanal cobalt mining," 1.

^[86] World Economic Forum, Making Mining Safe and Fair, 3.

^[87] Ojewale, "Child miners: the dark side of the DRC's coltan wealth."

^[88] Ibid.

^[89] Cabinet of the President, "Mining Code," 111-112.

^[90] Sovacool, "When subterranean slavery supports sustainability transitions," 288.

^[91] Christina Duranti (Good Shepherd International Foundation), interview with the authors, March 9, 2022.

The Dodd-Frank Act of 2010 created a foundation of transparency, requiring certain companies to report to the SEC what, if any, of their products use conflict minerals originating in the DRC or neighboring countries.[92] However, instead of issuing this information, companies have chosen to leave the country and the national government instituted a wholesale cessation of ASM in the country. After the extended closure of ASM, the International Tin Association (ITA) and PACT sought to bring back the multinational corporations which fled the country by collaborating to "trace each sack of coltan back to the mine it was dug from," ensuring that the coltan was not violating international standards or part of revenue generation for armed groups.[93] The ITA created the International Tin Association Supply Chain Initiative (ITSCI) to track coltan's supply chain in and around the DRC. ITSCI was tasked with performing random mine checks to observe if children were working at the site or if "armed men are hanging about, pocketing profits." If there were no observances armed groups or child labor, government agents tagged the sacks of minerals to certify them. Issues arose as some ITSCI inspection agents charged with checking turned to the black market to sell tags used to designate 'conflict-free' mines. Additionally, some miners consider partnering with ITSCI too costly, as the organization charges "roughly 5% of the value of tagged coltan."

The most recent attempt at formalization, the Entreprise Générale du Cobalt (EGC), implemented in 2021, sets the DRC government up as a middle-man purchaser between ASM participants and larger global refiners.[94] The program will also implement a USD\$30,000 per ton price floor, although some analysts like Guillaume de Brier have warned that, "what is scary, is that they don't offer a competitive price," incentivizing miners to still work with illegal buyers who offer better deals.[95] Additionally, there is a risk that such a program would force other, more established formalization programs to shut down due to the EGC's monopoly.

While significant attempts at formalization have been made in the DRC by both government and private actors, an unknown yet likely significant portion of ASM cobalt takes place in the informal sphere, allowing the use and presence of children in and around mines to flourish. Observers, international regulators, and development professionals all question why the shadow sector thrives. The two main reasons are insufficient implementation of formalization projects and economic and governance factors which disincentivize miners to participate in formalized sectors.

[92]Dodd-Frank Wall Street Reform and Consumer Protection Act, 839-844.

[93] Economist, "Why it's hard for Congo's coltan miners to abide by the law."

^[94] Deberdt, "The DRC's response to artisanal cobalt mining," 5.

^[95] Guillaume de Brier (IPIS), interview with the authors, March 2, 2022.

Due diligence and formalization projects designed with good intentions are rendered ineffective, or may even drive informal ASM, if they are not implemented at a sufficient pace and with wide coverage. This is noted above regarding the bureaucratic and technical roadblocks to a faster and more widespread implementation of the ZEA program.[96] Additionally, both legal and illegal taxation, in the form of bribes solicited by both corrupt state officials and non-state actors, pose not just a wider governance issue but also may prove to be a disincentive to participate in formal systems. Due to their low pay, state agents are known to harass miners about taxes. Non-state actors, often armed militias, will either "tax" miners for protection or set up checkpoints on key routes and collect tolls, eating into miners' profits.[97] As one interviewee explained, these miners, who "haven't even finished primary school, and they have to talk with the agents and all their life they've just known corruption," do not know which taxes are legal or illegal. Regardless of a tax's legality, the fiscal harm they cause to people, and the lack of return in the form of government services, incentivizes people to "create these second channels of untraceable [minerals]."[98]



Photo shows men and women copper-cobalt/CuCo/2C ASM panning operations in Lualaba, DRC. 2017. Photo credit: Afai Consulting BV.

[96] Christina Duranti (Good Shepherd International Foundation), interview with the authors, March 9, 2022.

[97] Parmar and Lebrat, "Minors and Miners: Accountability Beyond Child Soldiering," 9.

[98] Guillaume de Brier (IPIS), interview with the authors, March 2, 2022.

Entry into ASM is relatively cheap, making it accessible to large swaths of society. At its most basic level, the only tools required are some sort of hammer or pick, a shovel, and a flashlight. Many miners will skip protective equipment like hard hats or protective masks due to their scarcity or high cost. Many other sectors, such as agriculture, teaching, medicine, or transportation, involve hefty upfront capital investment in land, a degree, or a car. Artisanal mining and militias become the two main options for people without capital.[99]

ASM in the DRC tends to be highly volatile, with participants and their entire families often moving to "follow the flow of mining operations," according to Cristina Duranti. [100] Guillaume de Brier expanded on this idea, explaining "You earn money when it's productive. There's a huge [amount of] work to do before you extract the [minerals]. In fact, you're going to see that people move from one place to another not because the site is finished or empty [but] because they heard that one place was much more productive right now.... So you need to be very mobile."[101] This involves people and families moving not just between individual mines, but from one mineral to another, depending on the demand and viability of that supply chain. Such mobility poses a challenge to due diligence and formalization efforts, which relies on participants being licensed, possibly to a specific location, with training in safety and tracking processes. Additionally, this mobility may result in miners rotating between several different minerals, each with their own regulatory systems, or lack thereof. Lastly, if miners are nomadic and move great distances to find profit, bringing their families with them, this may pose a risk to development or education of their children.

Informal cobalt ASM activities take place in a variety of locations and methods. The first is within unexploited sections of much larger industrial concessions. This may involve either adults or even children acting alone or in small gangs to break in at night. Second, also related to the industrial concessions, is scavenging activities within the tailings of the industrial mines. In this type of activity artisanal miners, often women and girls, will dig through the waste tailings for smaller cobalt deposits left behind.[102]

^[99] Guillaume de Brier (IPIS), interview with the authors, March 2, 2022.

^[100] Christina Duranti (Good Shepherd International Foundation), interview with the authors, March 9, 2022.

^[101] Guillaume de Bbrier (IPIS), interview with the authors, March 2, 2022.

^[102] Christina Duranti (Good Shepherd International Foundation), interview with the authors, March 9, 2022.

Concession owners may tolerate these first two activities, or they may instruct their private armed security guards to prevent them through beatings and shootings. These activities may place industrial mining operations in a tough spot: Preventing ASM workers from mining in concessions risks creating tensions and sparking violence between the companies and the locals, while permitting it risks global entities labeling them human rights abusers for enabling, or not actively preventing, child ASM labor. [103] Third, miners may mine in inhabited areas of cities and villages, even leading to situations where shafts exit into private residences or front yards. This variety is particularly dangerous, as it increases the chance for exposure to toxic particles and runoff from the mining process. It can also destabilize the ground as miners work without any engineering training or geological information, causing collapses in densely populated areas.[104] These risks significantly exacerbate the already existing dangers to the health and safety of children in and around ASM.

Like the informal cobalt sector, the DRC's informal coltan sector is rife illicit activities, including direct and indirect child labor and cross-border smuggling. Miners in the informal coltan sector come from "remote villages and towns in Kivu, [and] they either drop out of school or have never had the opportunity to attend."[105] Children working in the mines function as washers and diggers, and often endure sexual abuse, especially at bars and hotels near mines.



Photo: Landslides and collapsed roads caused by ASM in Kasulo, DRC, March 2019. Photo credits: Benjamin Sovacool. Taken from Benjamin Sovacool, "The precarious political economy of cobalt: Balancing prosperity, poverty, and brutality in artisanal and industrial mining in the Democratic Republic of the Congo," page 928

[103] Sovacool, "When subterranean slavery supports sustainability transitions," 283.[104] Christina Duranti (Good Shepherd International Foundation), interview with the authors, March 9, 2022.[105] Ojewale, "Child miners: the dark side of the DRC's coltan wealth."

Despite being sold only "for a pittance in towns along the borders with Burundi, Rwanda, and Uganda," cross border smuggling serves as the main source of profit and is reportedly a ubiquitous and relatively lucrative form of income.[106] Local community leaders report people "hiding it in the petrol tank of a motorbike... or in a secret compartment under a lorry."[107] This network extends further than the average smuggler and encompasses police who "look away in exchange for a cut."[108] In worst case scenarios, armed groups in Ituri, North Kivu, and South Kivu provinces "seize children from their home, forcing them to transport heavy loads or perform domestic work," creating a slave labor force to sustain their group and illicit activities. Additionally, environmental factors and intergroup conflict have led to the increase of illicit activities. Specifically, "flooding and interethnic conflict destroyed 700 schools, leaving 500,000 children out of school."[109] Purposefully destroying schools is a recruitment tactic for armed rebel groups as children who are not in school are then targeted for sex trafficking and recruitment into armed groups.[110]

[106] Ojewale, "Child miners: the dark side of the DRC's coltan wealth."[107] ibid.

[108] ibid.

[109] Department of Labor, Child Labor and Forced Labor Reports.

[110] Gilchrist and Sheppard, Our School Became the Battlefield, 34-35.

BURUNDI



Map of Burundi

History

Similar to neighboring Rwanda and some parts of the eastern DRC, Burundi was historically administered indirectly by Belgium and divided predominantly into a Tutsi "elite" class and a larger Hutu population.[111] Trends of ethnic violence and economic polarization resulted in massacres against the Tutsi in 1993 which led to a civil war lasting roughly until 2005.[112] Until this point, the country's economy was almost entirely agricultural, with up to 80% of foreign exchange coming from coffee[113] and around 90% of the population relying predominantly on subsistence

agriculture for survival.[114] The conflict, sanctions from 1996-1999, and a lack of previously established mining traditions meant that the mineral wealth of Burundi was not well understood.[115] USGS surveys from 1997-2005 mention small deposits of gold and columbium/niobium-tantalite ore (coltan), though not in quantities sufficient enough to impact global production.[116] However, production of these minerals, both by LSM firms and ASM miners, has ramped up over the past decade, with gold becoming the country's primary export between 2011-2012 and new attention being given to the mining sector via new regulations, licenses, and taxes. [117]

^[111] USIP, Burundi, 19.

^[112] USIP, Burundi, 12, 24.

^[113] Oketch and Polzer, "Conflict and coffee in Burundi," 86.

^[114] Heath-Brown, "Burundi," 254.

^[115] Matthysen, Review of the Burundian Artisanal Gold Mining Sector, 1.

^[116] USGS 1997, 1998, 199, 2004, 2005.

^[117] OEC, "Burundi Country Profile."

Léonidas Sindayigaya, Burundi's mining industry spokesman, said in a 2019 interview, "The mining sector is now bringing more than 50% of the foreign currencies. It will contribute even more, up to 70% in the future. The mining sector contributes more than coffee and tea put together."[118] It is unknown how much of this recent production has been done in-country by ASM and how much has continued to be smuggled from neighboring regions, particularly the DRC.[119] As the country leans more heavily on mining to expand its economy and restricts licenses to foreign corporations, the number of artisanal and small scale miners and risks to them continues to increase and consequently increases the likelihood of child labor

[118] Reuters, "Burundi's Mineral Exports." [119] Matthysen, 31.

COLTAN AND GOLD

In 2016, there were estimated to be over 34,000 artisanal and small-scale miners working within Burundi's largely underdeveloped system.[120] As of 2016, Burundi's governance and formal requirements over their ASM sector were severely lacking; corruption and clientelism pervaded what little governance and formal requirements had been enacted, and chain of custody documentation is often unreliable and inconsistent.

Burundi has ratified both ILO Convention 138 and Convention 182. While its mining code makes no prohibitions on child labor specifically, its updated Labor Code of 2020 does. Articles 10, 11, and 12 of section 10 handle the subject of child labor in general. Article 10 sets the working age at 16 but provides provisions for children as young as 14 to participate in "light work in the context of learning," and allows for work to begin at 15 for children not enrolled in schooling. Article 11 prohibits work "disproportionate to his or her abilities," while article 12 affirms ILO Convention 182 in identical language.[121] Furthermore there is neither a compulsory education age nor free education, which contributes to child labor by disincentivizing school attendance.[122]

"The [2020] Labor Code only imposes fines for violations of forced labor and the use of children in illicit activities," according to a U.S. Department of Labor report.[123] Vague terminology and lax enforcement of this code leaves room for child labor to persist. Overall, it is presumed that children are present at mining sites and with similar labor roles as has been observed in other countries in this report. The cases of child labor in Burundi's ASM sector can be attributed to current legal frameworks, a corrupt government system, and miners and other supply chain links who are disincentivized to work legally. In 2013 the Burundian government updated its mining code, which was first established in 1976.[124] The new code separates minerals from the oil industry, providing for specific attention to be paid to due diligence in the mining sector. However, these are no longer sufficient to achieve Burundi's future development plans.[125]

^[120] Perks and Hayes, Transparency in Revenues, vii.

^[121] Cabinet du President, "Code du travail du Burundi," 9-10. [122] Ibid, 3.

^[123] DOL, Child Labor and Forced Labor Reports: Burundi, 3.

^[124] Zeldin, "Burundi: New Mining Code Replaces 1976 Law."

^[125] AFDB, Republic of Burundi Country Strategy Paper.

As of 2014, gold mining comptoirs (traders) and cooperatives had difficulty registering to mine in Burundi, and many international actors withdrew due to poor geological prospects, political considerations, and tensions with local ASM miners.[126] A general lack of infrastructure has also inhibited growth in the country's mining sector.[127] The 2013 mining code requires that foreign comptoirs commit to the creation of infrastructure, effectively removing the Burundian government's responsibility to invest in their own infrastructure.[128] The present mining code also states that comptoirs have the responsibility to make socio-economic contributions and recruit personnel of Burundian nationality.[129] This stipulation has the potential to entice local ASM miners to enter into the formal sector, reducing the chance of children working with their parents.

The political uncertainty and corruption in the Burundian government has made international businesses reluctant to invest in Burundi's gold and coltan sectors. However, despite this reluctance, the coltan sector has shown to be important to Burundi's economy, with exports remaining steady over the past decade, and peaking at 6.3% of its total exports in 2018.[130] The highest importers of tantalum (coltan) as of 2020 are the United States, leading the next country (Indonesia) by 20%.[131]

Burundi's gold sector remains underdeveloped commercially as well.[132] In an effort to organizationally formalize their gold sector, the government formed mining cooperatives. Officially, gold from ASM is sold to cooperatives who then negotiate the price of that gold with government sanctioned comptoirs.[133] However, politicians and other influential individuals own most of the cooperatives, presenting an inevitable conflict of interest.

[129] Ibid, Section 73.

^[126] Matthysen, Review of the Burundian Artisanal Gold Mining Sector, v.

^[127]Nkurunziza, Ndikumana and Nyamoya, "The financial sector in Burundi," 8-9.

^[128] Office of the President, "Mining Code of Burundi 2013," Section 73.

^[130] OEC, "What does Burundi export?"

^[131] OEC, "Tantalum."

^[132] Nigarura, "Burundi: Horizon Scanning 2022."

^[133] Perks and Hayes, Transparency in Revenues, 5.

It is tempting for politicians to direct minerals according to whichever supply chain benefits them most financially and not what is best for the country's legal process and financial gains. It is not uncommon for comptoirs or cooperatives to underreport the amount of minerals they handle to avoid paying 'taxes' to the highly corrupt government system. In some cases, comptoirs will illegally refine and export minerals themselves, or will work without official approval. This is often due to Burundi's tax and fee regulations which create costs too high for most Burundians. This disincentivizes Burundians to legally enter the sector, increasing a black market.

According to some scholars, "global consumption of tantalum and tantalum-containing products do not match the production statistics of the USGS (US Geological Survey)."[134] Similarly, there is also an increasing discrepancy between officially declared gold exports and imports as was highlighted in a United Nations 2020 trade report.[135] A "discrepancy of at least USD \$4 billion [exists] between the United Arab Emirates' declared gold imports from Africa and what African countries say they exported to the UAE."[136] It is likely that this export data does not fully account for unauthorized ASM minerals that were sold. Smuggling and bribery among other illicit activities have been reported in Burundi's informal sector (usually from the DRC).[137] "Owing to the logistical framework characterizing the Great Lakes Region, almost all 3T minerals and artisanal gold produced in the eastern DRC need to pass through its eastern neighbours [sic]... either officially (in full conformance with all export procedures) or at under-declared customs values or smuggled altogether," a process which uses Burundi to create a false origin point for DRC-sourced minerals, free from conflict, allowing this gold to be sold in the formal (or informal) market.[138] Regardless of which market the gold is sold through, it is frequently transported overseas to the United Arab Emirates where legal oversight and enforcement is lax. As a result, major inconsistencies appear in official reports.[139]

^[134] Mancheri et al., "Resilience in the tantalum supply chain," 57.

^[135] Marks, Kavanagh and Ratcliffe, "The stain of smuggled African gold."

^[136] Ibid.

^[137] Confidential Interview B, Feb. 28, 2022.

^[138] BGR, "Regional Mineral Supply Chains, Conflict Risks and Due Diligence."

^[139] Blore and Hunter, "Dubai's Problematic Gold Trade."
It is unlikely that young children take part in smuggling. They are not entrusted with smuggling gold due to its high value, and therefore would only be present at other stages of the mining process.[140] Adults smuggling the gold usually carry it in their backpacks or pockets or smuggle it in hubcaps and bumpers of cars legally crossing the DRC border into Burundi.[141]

Due to the unwanted attention from the international community, the UAE established a Dubai Good Delivery Standard in February 2022. In an effort to more closely align with OECD standards, the UAE's requirements mandate refineries to conduct audits on their gold imports to verify their origin.[143] This due diligence is welcomed as the gaps in enforcement in the formal sector allow for corruption by politicians and government officials at any stage of the supply chain to benefit financially from these informal transactions. It will be important for the international community to pay attention to the effects of this new due diligence standard to further the agenda that is meant to ultimately protect children and human rights.



Lezhnev, "Conflict Gold to Responsible Gold: A Roadmap for Companies & Governments," 5.[142]

[140] Ben Clair (BetterChain), interview with the authors, April 16, 2022.
[141] Cristina Villegas (PACT), Interview with the authors, April 16, 2022; Confidential Interview B, Feb. 28, 2022
[142] Lezhnev, "Conflict Gold to Responsible Gold: A Roadmap for Companies & Governments," 5.
[143] Marks, Kavanagh and Ratcliffe, "The stain of smuggled African gold."; Blore and Hunter, "Dubai's Problematic Gold Trade."

It is known that children perform supportive roles in ASM, such as surface level digging, washing minerals, or selling supplies to the miners.[144] This itself may constitute a violation of the Worst Forms of Child Labor Convention under point (d) of Article 5 by "harm[ing] the health, safety or morals of children" via ways discussed in Part III of this report.[145] Additionally, the U.S. State Department highlights forced labor in gold mines due to both economic necessity and coercion in Burundi as another violation of this convention.[146] However, a lack of sufficient information and reporting on Burundi's supply chain, mineral origins, sales, and actors involved makes child labor in or around ASM gold mining difficult to assess. The U.S. Department of Labor also identifies child sexual exploitation and human trafficking taking place.[147] Gold mining is categorized as dangerous in the Department of Labor's Worst forms of Child Labor report, though neither coltan nor tantalum is mentioned in this report. [148] The absence of current and reliable data combined with an underdeveloped legal system gives reason to re-examine Burundi's ASM sector.

[144] Hahn et. al, Breaking the Chain, 19.

[145] ILO, "Worst forms of child labor convention."

[146] DOS, 2021 Trafficking in Persons Report: Burundi.

[147] DOL, Child Labor and Forced Labor Reports: Burundi, 2.

[148] DOL, Child Labor and Forced Labor Reports: Burundi, 1.

SOUTH SUDAN



HISTORY

South Sudan gained autonomy in 2005 and independence in 2011 from Sudan. Before and after independence, mineral and oil wealth have been South Sudan's two most lucrative export commodities. From 2005 to 2010, the relative stability in Sudan allowed for large areas of mineral deposits to be surveyed and extracted by domestic and international companies.[149] In 2013 a civil war broke out in South Sudan,

Photo Citation: USAID Food Assistance Fact Sheet, South Sudan, March 2020

destabilizing oil production and traditional currency. The insecurity halted LSM development, forcing many to seek gold ASM as an alternate means of work.[150] As in past civil wars, armed groups have used gold ASM to fund their war efforts.[151] These groups would tax ASM miners and seize gold mines from other armed groups.[152] This made South Sudanese communities particularly vulnerable for exploitation by black market traders as well.[153]

[153] Deng, Mertenskoetter and van de Vondervoort, Establishing a mining sector in postwar South Sudan, 14-15.

^[149] Ladu et al., "Environmental Impacts of Gold Mining," 3.

^[150] The Enough Project, "The Criminalization of South Sudan's Gold Sector," 2.

^[151] Deng, Mertenskoetter and van de Vondervoort, Establishing a mining sector in postwar South Sudan, 5.

^[152] Johnson, "The Root Causes of Sudan's Civil Wars," 114.

In 2018, South Sudan signed the Khartoum Declaration of Agreement between Parties to the Conflict in South Sudan, ending their civil war. The peace agreement established the Revitalized Transitional Government of National Unity until their scheduled election in 2023. There is currently a backlog in appointed positions in the state and local governments, creating a void in government enforcement.[154] Many armed groups who were excluded from the agreement have migrated south and claimed authority over communities that conduct gold ASM in Central and Eastern Equatoria provinces. In 2019, with the hopes of the agreement holding, South Sudan's national government advertised that its sixteen minerals, including gold, were open for foreign investment.[155]

South Sudan has endorsed the Extractive Industries Transparency Initiative (EITI) and established a mining system based on international standards.[156] The South Sudanese Mining Act of 2012 established regulations for artisanal and small-scale mining, including government bodies and legal infrastructure pertaining to the regulation of surveying, exploring, and extracting minerals.[157] It also recognizes the traditional rights of local South Sudanese citizens to pan minerals, and mandates control of ASM companies by South Sudanese citizens only.[158] The Act specifically states that no mining license holders shall "in any way employ or use child labour."[159] This aligns with the ILO Conventions 138 and 182.[160]

South Sudan has ratified other international conventions on child labor as well (see appendix 4) and has incorporated them in a variety of domestic laws pertaining to child labor across a variety of sectors (see appendix 5). ASM does not directly relate to all aspects of child labor set out in appendix 5. However, laws and regulations pertaining to the prohibition of military recruitment by non-state armed groups (who may control mines) and the prohibition of child trafficking (discussed later in our report) indirectly relate to ASM.

^[154] Confidential Interview A, February 28, 2022

^[155] African Review, "Gold Rush."

^[156] EITI, "President of South Sudan commits to global transparency standard"; The Enough

Project, "The Criminalization of South Sudan's Gold Sector," 2.

^[157] Mining Act, "Table of Contents."

^[158] The Enough Project, "The Criminalization of South Sudan's Gold Sector," 2; Mining Act, 18.

^[159] Mining Act, 59.

^[160] ILO, "ILO Conventions on child labour."

In 2017, South Sudan announced they would conduct a required petroleum audit to follow through with their endorsement of EITI and start their due diligence process.[161] As of 2022, South Sudan has not completed the requirements to become an EITI candidate.[162] South Sudan's instability and civil war have stunted the government's capacity to enforce mining regulations and child labor laws.



Child miner standing in artisanal mining hole in Greater Kapoeta. Photo credit Azaria Gillo, Cordiad Report, January 2016

[161] The Enough Project, "The Criminalization of South Sudan's Gold Sector," 3. [162] EITI, "Countries."

GOLD

There are an estimated 60,000 ASM miners in South Sudan, with an estimated half a million people benefiting indirectly.[163] Reports do not indicate how many children directly participate in ASM gold mining; however, reports indicate a large presence of children at ASM sites. The 2020 U.S. Department of Labor report on the worst forms of child labor states that in the Kapoeta region there are an estimated 7,600 children working in mining, shops and other work in the informal sector.[164] The image on page 33 shows a child miner standing in an artisanal mining hole in Greater Kapoeta indicating that the limited reporting is not due to a lack of children in this sector.

Besides general reporting about gold mining regions such as Kapoeta, there is little information on the roles of children at ASM sites in South Sudan. Interviewees we spoke with were unfamiliar with South Sudanese gold mining specifically. However, our analysis of the Democratic Republic of the Congo and Burundi leaves us to believe that similar practices are occurring in South Sudan. What can be deduced is that there is a high likelihood of children present at or around ASM sites, either performing light duties adjacent to the actual mining and/or using mercury to mine gold.



Gold can have similar mining techniques to Copper-cobalt/CuCo/2C ASM. Photo shows men, women, and children copper-cobalt panning operations in Lualaba, DRC. 2017. Photo credit: Afai Consulting BV.

[163] Cordaid, Mining in South Sudan, 10.[164] DOL, Child Labor and Forced Labor Reports: South Sudan, 3.

Children tend to participate in several different roles depending on their age. Children up to age 4 most likely accompany their parent(s) to the mining site due to inaccessibility of childcare, usually due to poverty. Children between ages 5 to 11 most likely help the women pan for gold in the river or watch the people at the end of the assembly line to make sure no gold is pocketed. Often these tasks double as entertainment while their parents are busy with more intense labor.[165] Children ages 12 to 17 are generally strong enough to participate in harder labor and are most likely carrying tools and helping men with surface level digging. Often at age 12, children drop out of school to seek employment, either joining an armed group or another lucrative sector, to help provide for their families.[166] Local communities believe that a child who has reached puberty is considered an adult and should help to provide for their family.[167]

There have been accounts of children working alongside ASM operations as well. In the DRC children have been observed selling goods, such as food, water, and soda, to the miners as well as the community next to the mines.[168] Often children under the age of 16 are seen transporting gold from the mines to the buyers down the road.[169] This is a common occurrence in gold ASM because a small amount of gold, and thus a lighter weight, can yield high profits. We suspect that similar types of child participation are occurring in South Sudan due to the economic and physical insecurity experienced by their citizens.

Poverty and economic insecurity tend to be a major push factor for children entering gold ASM. In South Sudan, nearly 7.2 million people (about half of South Sudan's population) faced crisis-level food insecurity and an estimated 1.4 million children under 5 years of age were expected to be acutely malnourished in 2021.[170] Some 8.3 million people in South Sudan are estimated to be in need of humanitarian assistance, which includes 310,000 refugees from neighboring countries.[171] Access to stable education and lucrative income sources is limited, leaving many to seek alternative sources of easy cash that their whole families, including their children, can participate in.

^[165] Guillaume de Brier (IPIS), interview with the authors, March 2, 2022.

^[166] Confidential Interview A, February 28, 2022.

^[167] ibid.

^[168] Confidential Interview B,February 28, 2022.

^[169] ibid.

^[170] The World Bank, "The World Bank in South Sudan."

^[171] ibid.

In the impoverished southern region of Kapoeta, families are already using gold mining as a means of escaping starvation. In 2020, Achii Lorot and her husband provided food and medicine for their nine children by mining for gold and receiving relief food from the government.[172] International gold market prices reached a ten year high in August 2020, topping off at USD\$2,048.15 per ounce.[173] In 2021, prices decreased slightly and Mrs. Lorot said she was struggling to find enough gold to support her family.[174] Gold mining, while dangerous in many situations, may be a family's only means of income.

With 80% of the South Sudanese population enduring poverty, evidence, such as gold exports, suggests that ASM gold mining is more active than reports state.[175] The government of South Sudan has stated that there is no formal gold sector in the country. However, international reports indicated there was an export of an estimated USD\$47.6 million in gold in 2019.[176] Informal foreign buyers estimate that an estimated one to two tons of gold are mined each year with an annual monetary value of USD\$24 million.[177] Local, state, and national estimates also do not add up. Although the government acknowledges that all ASM is currently unregistered, they buy some ASM gold from local families or villages and save it in their national bank or sell it to international buyers.[178] For example, the local government of Kapoeta states they purchase roughly 10 kilograms (322 troy ounces) of gold per month from local miners, but reports indicate that only one kilogram reaches the country's central bank annually.[179]

We surmise that some causes for these discrepancies stem from a lack of trust by state and local leaders of the national government, the costs of ASM licensing for the average citizen, and the lucrative gold prices on the black market. First, while the national government oversees the entire country's sector, the local governments such as Kapoeta set regulatory laws and control direct access to mining areas, as well as the formal gold market by overseeing gold prices and sales.[180]

^[172] Richard, "Taking from the poor."

^[173] World Gold Council, "Gold spot prices."

^[174] Richard, "Taking from the poor."

^[175] The World Bank, "The World Bank in South Sudan."

^[176] OEC, "South Sudan Country Profile."

^[177] The Enough Project, "The Criminalization of South Sudan's Gold Sector," 2.

^[178] Radio Tamazuj, "Interview: No formal gold mining in South Sudan."

^[179] The Enough Project, "The Criminalization of South Sudan's Gold Sector," 2.

^[180] Ibid, 3.

Traditional authorities, such as tribal leaders and local elites, distrust the national government and resist the formalization of gold mining in their regions altogether. [181] Second, with 4 out of 5 people living on less than USD\$1 a day, the expense for an ASM license is not within their capacity.[182] There are also limited ways for people to travel to a government location to apply for and receive their ASM license. Third, black market gold prices are often twice as high as the government's, incentivizing people to smuggle their gold to neighboring countries, such as the DRC, Rwanda, Uganda, and Sudan, to then be exported to Asia or the Middle East.[183]

The lack of trust coupled with the cost in licensing and price of black market gold means that most ASM gold does not go through government channels. While the national government lacks enforcement of child labor laws in general, the informal nature of ASM gold mining also reduces their capacity to enforce those laws. The U.S. Department of State 2021 Investment Climate Statements notes that labor laws and regulations are widely ignored in the informal sector and government officials do not enforce child labor laws through inspections or fines, regardless of the nature of work. [184] Discrepancies in exports, high poverty rates, and a lack of government enforcement suggest that there are probably more children being subjected to the worst forms of child labor than reports indicate.

Child soldiery, identified as one of the worst forms of child labor, may occur in the south of the country, where most ASM mines are located. Observers have indicated that there has been an increase in armed group activity in this region over the past few years.[185] Reports indicate that the 2018 peace agreement created national level peace, but violence at the local level has seen its largest increase since the beginning of the civil war in 2013.[186] We are unsure if the rise in armed groups is an externality of COVID-19, the 2018 peace agreement, or ASM gold mining. Regardless of the cause, an increase in armed groups places children at a higher risk of forced or voluntary recruitment.[187]

[181] Ibid, 3.

[182] UNDP, "About South Sudan."

^[183] Richard, "Taking from the poor."

^[184] DOS, 2021 Investment Climate Statements.

^[185] Confidential Interview A, February 28, 2022.

^[186] African News, New levels of militia violence in South Sudan.

^[187] Confidential Interview A, February 28, 2022.

There is also a high risk of these armed groups using ASM gold mining for funding, potentially exploiting child miners and endangering them by disputing mining territory.[188] Reports do not indicate who controls which mines currently, however it is assumed that authority is contextual and most likely already controlled in some capacity by these armed groups.[189]

Two concerns that could potentially lead to an increase in forced child labor relating to ASM gold mining are increased flooding and the worsening trend of child abductions in the cattle sector. The first concern is that South Sudan has seen unprecedented amounts of rainfall and flooding over the past three years causing the deaths of 800,000 livestock and impacting over 835,000 people.[190] In a typical rain season, from April through October, most of the countryside is inaccessible to the large cities. In the past three years, rivers and lakes have not subsided throughout the dry season, leaving many villages in central and northern South Sudan submerged and cut off from the main cities all year round.[191] This has prevented people from cultivating their lands and nearly 800,000 livestock are thought to have perished, decimating subsistence farming and worsening food insecurity.[192]



A family pulls their possessions and livestock on a homemade raft. Sebastian Rich/UNICEF, CNN, Dec 2021

[188] The Enough Project, The Criminalization of South Sudan's Gold Sector, 6.

[189] Confidential Interview A, February 28, 2022.

[190] UN News, "Dire impact from floods in South Sudan as new wet season looms."

[191] UNHCR Briefing Notes, "UNHCR warns of dire impact from floods in South Sudan."; Voiland, "South Sudan Submerged."

[192] UNHCR Briefing Notes, "UNHCR warns of dire impact from floods in South Sudan."

Internal displacement has increased steadily due to these floods. Southern South Sudan, where most ASM mines are located, has been least affected by flooding thus far, making it an ideal place for relocation by displaced populations.[193] A confidential source said that they have seen a large amount of flood related displacement, which adds pressure onto children to seek work to support themselves or their families.[194] There has also been conflict related internal displacement and refugees from neighboring countries, which heightens resource insecurity and makes ASM gold mining more enticing.[195] Flooding reduces the government's already weak enforcement capacity, potentially allowing for more illicit activity and child exploitation in gold mining areas.

The second concern is that in South Sudan's cattle sector, non-government organizations have observed an increase of child abduction and forced labor. An anonymous source assumes, based on the number of weekly abductions reported to NGOs on the ground, that there could be a large prevalence of abducted children trafficked through the ASM gold sector as well.[196] The U.S. Department of State's Trafficking in Persons Report 2021 already indicates that South Sudanese individuals coerce children into gold mining and other adjacent work, as well as exploit individuals in ASM operations along the border between South Sudan and the DRC.[197] The cattle industry is currently South Sudan's most lucrative sector for the average citizen. If flooding continues to worsen, we could see an increase in families and armed groups searching for financial alternatives and subjecting children to the worst forms of child labor.

^[193] ICRC, Final Report South Sudan: Floods.

^[194] Confidential Interview A, February 28, 2022.

^[195] African News, "New levels of militia violence in South Sudan"; Richard, "Taking from the poor."

^[196] Confidential Interview A, February 28, 2022.

^[197] DOS, Trafficking in Persons Report 2021, page.

V. TRENDS AND EXTERNAL DRIVERS

Across the Democratic Republic of the Congo, Burundi, and South Sudan small-scale artisanal mining has been impacted by several major trends and developments, including COVID-19, climate change, environmental degradation, conflict, and political instability. The pandemic directly caused a disruption at all levels of supply chains, obstructing due diligence efforts while simultaneously creating more ASM opportunities for children whose schools were closed. Climate change continues to exacerbate environmental degradation and detrimental health effects caused by artisanal mining. These have resulted in escalating insecurities and risks for mining families. The following sections will explore these trends and their significance by country.

COVID-19

The broader impacts of COVID-19 on ASM and child labor include border and travel restrictions, school closures, and a reduction in due diligence reporting and compliance. However, on-the-ground issues have varied widely. Border and travel restrictions indirectly affect children by decreasing the capacity of families to sell their mineral collection to buyers domestically and in neighboring countries.[198] This increases food and resource insecurity for families and can put pressure on children to seek more lucrative, but more dangerous, work.[199] School closures also increased pressure on children to seek work to provide for themselves and/or their family. Lastly, companies used border closures and anti-spread precautions to justify their reduction in due diligence compliance and reporting.[200]

The most detrimental outcome, according to Jared Connors of the supply chain sustainability management company Assent, has been the lack of visibility due to the cessation of movement within and between countries.[201] He stresses the importance of local interviews and direct contact with people involved in ASM to ensure that the regulations the national government and international community have put in place are effective.[202] In times of crisis, some companies tend to divest from due diligence practices to reduce spending and maintain margins. Companies also start denying inspectors access to their due diligence records, blaming the crisis for their inability to publish said information. According to Mr. Connors, this was also common during the 2008 global financial crisis.[203]

^[198] Thierens and Mawala, "The impact of Covid-19 on artisanal mining communities," 2.

^[199] World Bank, "Emergency Response for Artisanal and Small-Scale Mining Communities Impacted by COVID-19."

^[200] Jared Connors (Assent), interview with the authors, March 1, 2022.

^[201] ibid.

^[202] Jared Connors (Assent), interview with the authors, March 1, 2022.

^[203] ibid.

Governments tend to reduce due diligence capacity because of greater demands for personnel to address the current crisis. The European Union passed Conflict Minerals Regulation in 2017, which took effect on 1 January, 2021.[204] However, the EU has stated that due to COVID-19 they have not been able to create the portal required for tracking and enforcing due diligence of 3TGs.[205] In the DRC, COVID-19 increased the difficulty of enforcing programs which rely on site inspections and supply chain certifications. These programs rely on fees taken from ASM revenues, which declined throughout the pandemic. This, combined with a general reduction in national and provincial tax revenues, resulted in lower pay for inspectors, cuts to the overall operational budget for such schemes, and reduced due diligence and certification implementation throughout.[206]

ASM populations increase or decrease depending on the market value of a given mineral and the relative difficulty of obtaining and selling the given mineral. Internationally, indirect impacts of COVID-19 on mineral usage caused gold prices to skyrocket. Gold, as a reliable safe-haven currency, was in high demand globally as the pandemic halted traditional revenue sources and destabilized domestic economies. [207] Prices have averaged between USD\$1,700 and USD\$2,000 per ounce since August 2020 and have spiked again slightly due to continuous economic strains from COVID-19 and instability with the war in Ukraine.[208] Domestically within the COFs, there was a reduction in ASM production due to COVID, however it quickly rebounded and has continued production at full capacity ever since.[209] This may indicate that more ASM miners, including children, are present at and around ASM mines in the DRC, Burundi, and South Sudan.

^[204] EU, "Conflict Minerals Regulations."

^[205] Jared Connors (Assent), interview with the authors, March 1, 2022.

^[206] Barume et. al., "Covid-19 Crisis Threatens Responsible Mineral Supply Chains," 4-5.

^[207] Koh and Baffes, "Gold shines bright throughout the Covid-19 crisis."

^[208] Darine, "Gold hits 1-month high."

^[209] Hugh Brown (international photographer), interview with the authors, March 4, 2022.

In the DRC, school attendance before COVID-19 was marginal due to overcrowding, understaffing, and long distances between homes and schools.[210] During COVID, the DRC government closed all schools for about eight months, reopening them in October, 2020.[211] The school closure increased the number of children searching for work, which resulted in an increase in sex trafficking and forced child labor.[212] There was also an increase in the number of boys recruited by armed groups in areas affected by conflict, which would include areas with ASM sites.[213]

The COVID-19 pandemic also led to an increase in smuggling, child sexual exploitation, and child labor in and around ASM mines. For example, in the DRC, border closures "led to an uptick in cross-border smuggling of untagged gold, tantalum, and tin from North and South Kivu into Rwanda and Burundi," as the tenuous legal channels that existed became even more limited.[214]

In South Sudan, the national government declared school closures for 14 months, reopening them in May 2021. Unfortunately, UNICEF states that many children were unable to return because of ongoing violence and climate shocks.[215] Outside of the city centers, however, COVID-19 had little effect on the population for three key reasons.[216] First, news about COVID-19 did not reach many villages and towns due to a lack of physical and technological connection. Second, if COVID-19 was present within these villages, it tended to be a more invisible disease compared to Ebola, which is still rampant in many parts of the country.[217] Third, many people believe that COVID-19 is khwaja, the white person's disease, and therefore cannot infect them. [218]

^[210] DOL, Child Labor and Forced Labor Reports, 3.

^[211] CASS, Covid-19 School Closures in the DRC, 6

^[212] DOL, Child Labor and Forced Labor Reports, 5.

^[213] CASS, Covid-19 School Closures in the DRC, 9

^[214] DOL, Child Labor and Forced Labor Reports, 3. [215] UN News, "Joy in South Sudan."

^[210] ON News, Joy In South Sudan.

^[216] Confidential Interview A, February 28, 2022. [217] Confidential Interview A, February 28, 2022.

^[218] ibid.

Although South Sudan's schools were closed, this proved to have little effect on the number of children entering the labor sector. Education is often seen as the best and most reliable way to decrease child labor. However, a confidential source indicated that pre-Covid, South Sudan was already lacking in primary and secondary schools. Most schools located in rural areas were largely unaffected by COVID-19 because they are funded by humanitarian aid organizations and run by local personnel.[219] Conveniently, most of these schools were able to remain open because funding continued, and the teachers did not need to travel.

Another possible externality of COVID-19 is that South Sudan has seen a strengthening of non-state armed groups over the past two years, according to the anonymous source.[220] We are unsure if this has a direct correlation with COVID-19 or if this issue is due to other factors, such as political instability or government enforcement gaps. Further research is required to answer this question.

Out of our three countries of focus, Burundi has had the least amount of research and reporting regarding the effects of COVID-19 on children in and around ASM. Burundi was the only country that did not close their schools due to COVID.[221] We were able to find rough case and casualty statistics in Burundi, as well as how border closures have affected cross-border mineral supply chains.[222] However, we were unable to obtain, either from the literature review or our interviews, what effects, if any, COVID-19 has had on children in ASM.

[219] ibid
[220] ibid
[221] ADEA, AU/CIEFFA and APHRC, School Reopening in Africa during the Covid-19 Pandemic, 8.
[222] WHO, "Burundi Covid-19"; Thierens and Mawala, "The impact of Covid-19 on artisanal mining communities,"
2.

CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION

An alarming trend that may increase the worst forms of child labor in ASM are the impacts from climate change. The UN stated in their Climate Change 2022: Impacts, Adaptations and Vulnerability report that "widespread, pervasive impacts to ecosystems, people, settlements, and infrastructure have resulted from observed increases in the frequency and intensity of climate and weather extremes, including hot extremes on land and in the ocean, heavy precipitation events, drought and fire weather."[223] They indicated that the most vulnerable people will be, and have already been, affected the most due to an inability to adapt to changing conditions. In the DRC, Burundi, and South Sudan a large percentage of the population (40%, 80%, and 90%, respectively) depend on subsistence farming for their food, income, and cattle.[224]

In 2020, higher than normal precipitation was recorded across the region, including in the central Nile catchment in Sudan and South Sudan, and the lower course of the Congo River in the DRC.[225] On the other hand, droughts were recorded in southern DRC and the Congo basin, among other locations.[226] The direct effects of climate change have hurt the DRC's agriculture industry and increase food insecurity. In the DRC, a 2020 United Nations Environment Program (UNEP) report stated that "the duration of the rainy season in the drought-prone region of Katanga is expected to reduce from seven to five months."[227] A reduction of rain will dramatically affect this region in the DRC since they are dependent on rain-fed, small-scale agriculture. [228] In 2020, the number of severely food-insecure people in the DRC totalled an estimated 21.8 million.[229]

[223] Working Group II, Climate Change 2022, 11.

[224] International Trade Administration, "Republic of Congo."; Hollema and Modero, Report on Food Security and Nutrition South Sudan, 1.

[225] WMO, State of the Climate in Africa, 5.

[227] ibid.

[228] UNEP, "Study confirms DRC's Potential as Environmental Powerhouse."

[229] ibid, 22.

^[226] ibid, 10.

South Sudan reported loss of life and significant displacement due to floods, as well as loss of agriculture and cattle from these floods and desert locust outbreaks. [230] The UN estimates that about 600,000 South Sudanese were displaced and the 800,000 livestock that perished in floods, compounded by the inaccessibility of these flooded lands, has caused a lack of economic opportunity.[231] South Sudan has already experienced three years of flood related displacement, and predictions indicate 2022 will be a record rainfall year again. Burundi was also affected by droughts and flooding, although the amount of damages and people affected was relatively low. [232] The United Nations estimates that food insecurity in sub-Saharan Africa, which includes the DRC, Burundi, and South Sudan, increases by 5-20% with each flood or drought, resulting in an almost 40% increase in populations affected by food insecurity in 2020. [233] Climate change and socio-economic hardship are intrinsically bound in the DRC and South Sudan and create conditions for people to seek other forms of employment, such as ASM. While Burundi has been less affected by climate change, its porous borders make it vulnerable to displaced populations due to climate change from neighboring countries.

Another trend that may increase the worst forms of child labor in ASM are the impacts from environmental degredation from that very same ASM. In the DRC, entire neighborhoods have been destroyed by environmental degradation as miners use their neighborhoods and even their own living rooms as mining sites depending on the need. [234] In addition to severe environmental degradation, the scale of production and unregulated working conditions have had devastating effects on the health of adult and children miners. Indirectly, heavy metals from mining pollute the water and air in areas surrounding mining activities. The UNEP estimates that 51 million people in the DRC do not have access to potable water because of mining pollution.[235] Directly, ASM miners often mine without the proper protection from these heavy metals, exposing them to dangerous levels of toxic pollution.[236] Cobalt mining has led to an increased risk in birth defects for children of miners.[237]

- [235] UNEP, "Study confirms DRC's Potential as Environmental Powerhouse."
- [236] Kelly, "Pollution causing birth defects."

[237] ibid.

^[230] Ibid, 18, 22.

^[231] WMO, State of the Climate in Africa, 27

^[232] Ibid, 29.

^[233] Ibid, 5.

^[234] Mark Canavera (Columbia University), interview with the authors, March 2, 2022.

A partnership between two Belgian universities, KU Leuven and Ghent, and the Congolese University of Lubumbashi discovered an increase in birth defects among 138 newborns inside a mining zone compared to 103 newborns outside a mining zone. This study demonstrated that mining has a negative effect on every person in and around mining sites, regardless of age, gender, mining role, or proximity to the mining site.[238] The UNEP states that "deforestation, species depletion, heavy metal pollution, [and] an acute drinking water crisis" are the most alarming trends caused by mining in the DRC.[239]

In Burundi, gold mining sites are often not rehabilitated after use, creating areas of barren land inaccessible for agricultural use. ASM has also spread to formerly protected lands such as the Kibira National Park.[240] The image below shows ASM gold mining along the Kaburantwa River and the resulting environmental degradation that occurred between 2005 and 2009.[241] Also, chemicals used to extract minerals, such as mercury used for gold, have been reported to pollute the environment and water in and around mining sites, similar to the DRC.[242] Communities downstream are indirectly affected, which expands the number of people and amount of land exposed to the chemical cleaning processes.[243]



Review of the Burundian Artisanal Gold Mining Sector, IPIS. April 2015. p. 29

[238] ibid.
[239] UNEP, "Study confirms DRC's Potential as Environmental Powerhouse."
[240] Ibid, 37.
[241] Matthysen, Review of the Burundian Artisanal Gold Mining Sector, 29.
[242] ibid, 37.
[243] Ibid, 36.

In South Sudan, ASM also contributes to environmental degradation and water pollution. A 2019 study found that gold mining in the community of Gorom Village in Eastern Equatoria state produced high levels of arsenic and antimony concentration in the rivers.[244] Mercury has also poisoned the local land and water systems, and it is reported that ASM gold mining is responsible for releasing 5 tonnes of mercury emissions annually.[245] All three metals have reportedly led to a loss in aquatic life, depletion of soil, and destruction of farmland.[246] Vegetation loss due to soil depletion has increased erosion and reduced groundwater restoration, causing the land surrounding ASM mines to be unusable for sustainable farming.[247] A lack of grazing land for cattle due to chemical degradation and contamination will likely force children to find more lucrative work to support their families, such as ASM gold mining or sex work. Also, an externality of ASM is that malaria has resurfaced due to stagnant water at abandoned ASM mines.[248]

Climate change and environmental degradation caused by mining have shown to create short and long-term issues for food insecurity, income sustainability, and individual health. Displacement due to climate change has also shown in South Sudan to place added pressures on resources in an already resource scarce country, and we believe this is an accurate assessment for the DRC and Burundi as well.[249] We will likely see an increase in forced and the worst forms of child labor in and around ASM in all three countries if affects of climate change and environmental degradation continue on there current trajectory.

[244] Ladu et al., "Environmental Impacts of Gold Mining," 3.
[245] Ibid, 7.
[246] Ibid, 3.
[247] Ibid, 7.
[248] Ibid, 8.
[249] Confidential Interview A, February 28, 2022.

CONFLICT AND POLITICAL INSTABILITY

Across all three countries, conflict and political instability have been factors in children subjugation to the worst forms of child labor in and around ASM mines, and have increased their vulnerability to violence and exploitation. In the DRC, reports indicate that ASM sites are linked to a rise in violence due to territorial conflicts between armed groups seeking mineral profits. This effect is referred to as the "rapacity effect" in which violence is used to protect the increased value of mining activity. Conversely, an increase in large scale mining (LSM) appears to decrease conflict. Specifically, research suggests there seems to be lower levels of violence in the LSM production phase. Furthermore, due to the larger production capacity and revenue generated by LSM, companies have the means to protect their mines and products more easily than their ASM counterparts.[250] Relatedly, LSM sites are usually able to pay workers higher wages which may disincentivize people from joining armed rebel groups and working in ASM sites. Finally, when properly regulated, LSM sites can serve as a sustainable employment option for those who are forced to work in ASM due to widespread lack of employment opportunities in the formalized economy.[251]

In Burundi in 2015, in the aftermath of a twelve year civil war, election violence broke out after the President controversially won a third term.[252] Cleavages between Hutu and Tutsi political and armed groups have led to the deaths of 1,200 people and the International Criminal Court opened an investigation for crimes against humanity. [253] According to Genocide Watch, Burundi is categorized as being in a genocide 'warning' stage with government agents accused of perpetrating violence against political opponents and the general public.[254] This instability leaves Burundi in a state of heightened vulnerability to illicit activity, including the worst forms of child labor.

[250] Stoop, Verpoorten, and van der Windt, "Artisanal or Industrial Conflict Minerals? Evidence from Eastern Congo," 661.
[251] ibid.
[252] BBC, "Burundi Country profile."
[253] ibid.
[254] Genocide Watch, "Burundi."

In South Sudan, national elections scheduled for 2023 make political instability in an increase in forced labor and child recruitment a major short-term concern. Non-government organizations are observing all parties struggling to gain more control and power at the local, state, and national level, as well as an increasing trend of forced or encouraged recruitment of children.[255]

This trend may increase instability in the country for at least the next year, forcing families to rely on alternative currencies for survival and pushing them towards the ASM gold sector. As a long-term concern, conflict traditionally increases in the dry season and decreases in the wet season due to water resources and travel accessibility. [256] However, with the increase in flooding almost year round, we could see displacement leading to conflict over waning resources. Additionally, gold has also been discovered, but not yet mined, on the border of Sudan and South Sudan. With flooding destroying crops and cattle grazing in the central and northern parts of South Sudan, this border location could become another hotspot for ASM gold for desperate families and a hub for other illicit activity.[257]

Lastly, a population we have not discussed, but who are present in all three countries, are refugees. Refugees, like internally displaced persons, do not have a stable and sustainable source of income, driving them to seek fast cash alternatives. Often, countries with high refugee populations see increases in forced and worst forms of child labor, such as in ASM, since this population is easily exploited and lives in the shadows.[258] If there is conflict and political instability in neighboring countries, as well as climate change disasters, there will likely be an increase in refugee populations and, thus, an increase in child labor at ASM mines in the DRC, Burundi, and South Sudan.

^[255] Confidential Interview A, February 28, 2022.

^[256] ibid.

^[257] Radio Tamazuj, "Interview: No formal gold mining in South Sudan."

^[258] Cristina Villegas (PACT), interview with the authors, April 16, 2022.

VI. FUTURE AREAS OF FOCUS

Existing literature and interviews conducted for this research have demonstrated that responsibility for ensuring clean supply chains and maintaining safe conditions, proper regulations, and human rights in the mining industry must be shared between several key parties. This research has also shown that the framing of certain issues, from core definitions to processes aimed at maintaining clean supply chains, may need to be revisited. Lastly, it has shown that several systemic issues are found across borders and supply chains, such as regulations, governance, private sector coordination, and development. These systemic issues are major obstructions to programs, regulations, and organizations intended to eliminate the worst forms of child labor in ASM.

REGULATION

Key to any legal regulatory regime are clear and sustainable definitions that can properly frame and target the activities in question. The full extent of its side effects and impacts must also be considered. Unfortunately, this research has demonstrated that many, if not most, of the existing international and local regulatory regimes regarding ASM do not properly consider local contexts or medium-to-long-term side effects.

Existing regulations assess each mineral as if within isolated labor markets. However, these markets and the labor within them are fluid, allowing participants to mine whichever mineral, or at whichever site, is most profitable at a given moment. Regulating one sector, such as gold, even with the most effective practices, will not eliminate direct or indirect dangers in another sector. A more holistic approach that encompasses all ASM sectors of concern would likely be more effective at identifying miners who may be illicitly working, including children. The existing patchwork of regulatory regimes do not meet these standards.

Strict due diligence regulations that either intentionally or unintentionally lead to the wholesale lockdown of the ASM sector may do more harm than good. This was the case in the DRC after the passage of the Dodd-Frank Act, when the Congolese government temporarily banned the entire ASM sector to comply with the designated regulations in that law. However, well intentioned foreign regulatory bodies might be, they must consider their impacts on the regulated downstream companies, mineral origin countries, and local communities mining these minerals. Developed countries must ensure they are not simply acting to maintain the appearance of disentangling commerce and human rights abuses from mineral supply chains.

Additionally, when formalization and due diligence processes are perceived by either miners or purchasers as too burdensome, they lose their strength. Miners may be incentivized to work around them, thus further pushing people into the informal sector, while companies may be incentivized to pull out of that market altogether. Thus, these due diligence processes do not stop targeted illicit activities and may unintentionally hurt local ASM participants by depriving them of vital sources of income. While regulatory regimes intend to protect children, uphold the rights of the wider community, and ensure that vital ores are being mined in clean and safe ways, they are not framed with local context in mind. They often do not consider the centrality of ASM to an individual's or family's basic economic survival. Additionally, they may frame the active participation of children as entirely forced, not considering the personal agency that some of the children may be exercising. Existing definitions of child labor from international organizations place clear age limits on these types of labor. In doing this, they do not consider how local communities view the relationship between age and agency. That agency may not conform to international standards or it may be driven by the pursuit of certain 'perks,' such as additional income to help a struggling family or alcohol and drugs. Nevertheless, existing regulations risk being ineffective by not properly taking these considerations into account.

Future international endeavors at regulation and due diligence should take local context into account. NGOs, international organizations, and foreign governments should conduct greater field research in the communities they aim to protect, instituting a bottom-up element to an otherwise entirely top-down process. Research mechanisms already in place for monitoring human rights abuses and armed group activity can be adjusted to also monitor illicit activity and child labor in and around ASM sites. Also, given the due diligence program requirements for real-time and verified data, companies and regulatory agencies should build their capacity by partnering with organizations already on the ground, such as Better Chain[259] or CRAFT 2.0.[260]

Lastly, the national governments of the COFs should take a greater role in developing international regulations to eliminate forced and the worst forms of child labor from the ASM supply chain, although this will require greater government capacity, as the next section will discuss.

[259] Better Chain [260] Craft 2.0

GOVERNANCE

Aside from the risk of inadequate policy, regulations often become entangled in the implementation stage and are rendered ineffective. This is often due to insufficient reach, knowledge, and capabilities of the enforcing governance bodies, including the DRC's Ministry of Mines and Ministry of Labor; the Burundian Ministry of Hydraulics, Energy, and Mines; South Sudan's Ministry of Mining; and each country's judicial system.

Formalization and enforcement require a vast amount of preparation work. This can range from engineering surveys to ensure the structural safety of a site to education informing miners about the rules and practices of the new regulatory regime. If states or provinces lack the staff, vehicles, and capital to carry this out, then the "formal" ASM sector will be rather small, forcing a great deal of miners into the illegal sector. A program that makes a clear distinction between legal and illegal markets without the capacity to transition a critical mass of people into the legal side will not just be ineffective but will delegitimize any further regulatory attempts. Therefore, governments must increase their physical and human capital in order to grow formalization programs to a viable size.

Additionally, COF governments must increase their border patrol capacities in order to monitor and enforce laws against many of the illicit activities connected to ASM that occur in the border regions. Child trafficking and mineral smuggling, including by children, continue to feed the use of forced and worst forms of child labor in the sector. Such smuggling is one way for informal ASM to act outside of and infiltrate closed and regulated supply chains. To cut it off would likely contribute greatly to maintaining a safe, secure, and law-abiding ASM sector.

Even with enough state officials, enforcement of the rules and proper behavior is still lacking. Bribery and other acts of corruption are often the norm in the countries of focus. When officials ask for bribes, or illegal "taxes" (bribes with the veneer of authority), it routes revenue away from the state, harms the miners who may be mining for their most basic livelihoods, and incentivizes a further move into informality and shadowy practices. This impact is worsened when people can no longer tell the difference between legal and illegal taxation, which may be enforced by the same government officials.

PRIVATE SECTOR

When considering the roles that the private sector plays, one must divide between upstream and downstream companies. Upstream companies, directly involved in the industrial mineral extraction and in the markets which purchase ore from small-scale miners, bear great direct responsibility. Industrial mining companies own massive concessions that are even larger than some of the world's biggest cities, but these concessions often encompass or encroach upon small villages or neighborhoods of larger cities. This causes resentment, displacement, and economic loss. Concession owners, therefore, have a responsibility to ensure good relations with their neighbors and ASM participants, as well as to provide safe and sustainable opportunities for the people.

Slightly further down the chain, the direct purchasers of ore, whether embedded in the mining communities or located in Dubai, have a responsibility to ensure that they purchase from those who comply with regulations. A challenge of regulatory regimes, such as bag and tag schemes, is that they can be relatively easy to infiltrate through smuggling, fraud, bribery, and theft. Middle-man purchasers cannot allow themselves to be part of this flaw, yet some continue to knowingly purchase from less than reputable sources and make it harder for downstream companies to complete due diligence.

Downstream companies that aim to comply with due diligence standards as set forth by the Securities and Exchange Commission, European Union, and other bodies may find it too burdensome to verify the origins of and practices used to extract materials. Instead, they may simply divest their supply chains from certain countries, promulgating "Congo-free minerals" instead of "conflict-free minerals." [261] This is not an advisable reaction because it will likely inflict harm upon the people that it claims to protect. Furthermore, it would not be in the interests of the companies given the sheer proportion of mineral supplies concentrated in these countries. Therefore, it is not practical, either.

[261] Guillaume de Brier (IPIS), interview with the authors, March 2, 2022.

DEVELOPMENT

Much like other harmful undesirables such as pollution or drug use, governments and business cannot simply regulate issues of child labor, human rights abuses, or other wide-reaching externalities out of the mineral supply chains. The social and economic drivers of ASM participation, especially that push children to participate, require a multipronged approach. Oftentimes, the presence of and impacts on children in mining communities can be resolved or managed through development programs working in tandem with regulatory systems. Such development must tackle key root causes, such as the provision of childcare so parents are not forced to bring their children with them to the mines; the expansion of free education, so children are not forced to work in the mines to pay school fees, as well as access to education in rural communities; the improvement of healthcare provisions and knowledge to eliminate harm caused by polluted air and water sources; and climate adaptability programs to reduce displacement and economic shocks on local populations. Additionally, when considering the role of development, it becomes clear that socio-economic circumstances, which may lead to cases of debt bondage and other coercion, are a key driver of forced and worst forms of child labor. Mining is often the economic backbone of these communities. Whether part of a family, orphaned, or put in a position of caring for an older relative, children frequently bear the costs of underdevelopment in mining communities. Development can help make mining more sustainable and limit its centrality so that children have fewer reasons to participate.



Man selecting stones and holding toddler due to a lack of childcare opportunities. Coppercobalt/CuCo/2C ASM operations in Lualaba. 2017. Photo credit: Afai Consulting BV.

VII. CONCLUSION

The resource-rich countries of the Democratic Republic of the Congo, Burundi, and South Sudan demonstrate the possibilities and risks of mineral wealth as they contribute to rapidly growing ASM sectors. Political and military instability, poor governance, international exploitation, climate change, and environmental degradation prevent these populations from accessing sustainable socio-economic sectors, non-hazardous employment, and education. As a result, many turn to artisanal and small-scale mining as a means of supporting themselves and their families. The lucrative short-term benefits of ASM may not outweigh their long-term costs such as destruction of fertile land that could be used to improve food security and agriculture employment, health issues which cause birth defects, and the illicit use and exploitation of children. However, if concerned governments and firms do not address issues of weak governance structures and corruption, climate change and adaptability measures, and vast socio-economic disparities, ASM will continue to be the most viable form of income for thousands. International organizations, nongovernment organizations, the private sector, and foreign and domestic governments need to collectively address these push factors. To eliminate the worst forms of child labor in the ASM sector, solutions must be holistic in their creation and implementation.

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VIII. APPENDIX

1. Original Statement of Work

This research project will focus on the linkages between [the] extractive industry and the recruitment and use of children for mining, commercial sexual exploitation, and other illegal activities in Africa. In particular, the research will look at the role of state and non-state security forces, including armed forces, police, syndicates, foreign mercenaries, and other security forces.

2. General Questions

- Tell us about yourself and your role or organization/ how it connects to ASM
 - Describe the nature of your work in ASM
- What trends are you seeing from your professional perspective?
 - What are the negative tends in the supply chains in relation to child labor?
 - What are the positive trends in the supply chains in relation to child labor?
 - What trends are you witnessing in terms of the industry? Where its going? What challenges have you seen? How has the climate you have been working in changed? Be more focused in leading them.
 - Can you comment at all on these particular issues?
- Illegality / Smuggling
 - What role does illegality play in tracing the origins of X mineral?
 - What role do children play in the illegality of X minerals? (such as syndicates controlling minds, bribery, mines without permits, etc.)
- Government
 - For the government of X country, what are the barriers that are preventing the government from regulating X sector?
 - What are the things that X government could fix?
 - To what degree do you see interference from government and security sector officials? (corruption, hindering due diligence and supply chain tracing/human rights protection efforts, etc.)

- Security Sector
 - Criminal elements? Militia groups?
 - Are they people from outside the community? Community members?
 - Threats to legitimate operations?
 - To what degree do you see the military having power over or influence over specific mines and/or being the point of contact for businesses?
 - What do you see as the role of the formal military units? Informal warlords? Non-traditional threats?
- Child Labor/Safety
 - Where do you see children working the most? In the mines? Helping their families with other tasks at the mines? Smuggling / transporting the minerals?
 - To what degree do you see programs working to protect children who are indirectly affected by ASM (so not those going into the tunnels or sorting, but those living in the communities affected by polluted air/water, collapses in residential-area mines, etc.)
- ASM
 - What in your view pushes people to ASM?
 - How are due diligence and formalization efforts negatively or positively impacting the livelihoods of those who rely on ASM work?
- COVID-19
 - Have you seen any impact on this whole business (ASM) that you are doing because of COVID?
- External forces and their impact? Rwanda, Uganda, etc. (population movements?)

3. DOL Child Labor and Forced Labor Reports, 2020, Burundi, Laws and Regulations on Child Labor

Standard	Meets International Standards	Age	Legislation
Minimum Age for Work	Yes	16	Articles 2 and 10 of the Labor Code; Article 3 of the Ministerial Ordinance to Regulate Child Labor (22,23)
Minimum Age for Hazardous Work	Yes	18	Articles 270 and 279 of the Labor Code; Article 13 of the Ministerial Ordinance to Regulate Child Labor (22,23)
Identification of Hazardous Occupations or Activities Prohibited for Children	Yes		Articles 9–15 of the Ministerial Ordinance to Regulate Child Labor (22)
Prohibition of Forced Labor	No		Articles 7, 8, and 617 of the Labor Code; Articles 4 and 10 of the Trafficking in Persons Law; Article 545 of the Penal Code (23-25)
Prohibition of Child Trafficking	Yes		Article 12 of the Labor Code; Articles 4–6 and 10 of the Trafficking in Persons Law; Article 197 of the Penal Code (23-25)
Prohibition of Commercial Sexual Exploitation of Children	Yes		Article 12 of the Labor Code; Articles 519, 542-544 of the Penal Code; Articles 4 and 10 of the Trafficking in Persons Law (23-25)
Prohibition of Using Children in Illicit Activities	No		Article 12 and 618 of the Labor Code (23,25)
Minimum Age for Voluntary State Military Recruitment	Yes	18	Article 6(c) of the National Defense Troops Law (26)
Prohibition of Compulsory Recruitment of Children by (State) Military	N/A*		
Prohibition of Military Recruitment by Non-state Armed Groups	No		Article 12 of the Labor Code; Articles 200.2.27 and 200.5.7 of the Penal Code (23,25)
Compulsory Education Age	No	15‡	Article 35 of the Law on Basic and Secondary Education (27)
Free Public Education	No		Article 53 of the Constitution; Articles 17, 35, and 47 of the Law on Basic and Secondary Education (27,28)

* No conscription (26)

4. DOL Child Labor and Forced Labor Reports, 2020, South Sudan, Ratification of International Conventions on Child Labor

Convention	Ratification
ILO C. 138, Minimum Age	1
ILO C. 182, Worst Forms of Child Labor	1
UN CRC	1
UN CRC Optional Protocol on Armed Conflict	1
UN CRC Optional Protocol on the Sale of Children, Child Prostitution and Child Pornography	1
Palermo Protocol on Trafficking in Persons	

5. DOL Child Labor and Forced Labor Reports, 2020, South Sudan, Laws and Regulations on Child Labor

Standard	Meets International Standards	Age	Legislation
Minimum Age for Work	Yes	14	Section 12 of the Labor Act; Article 25(3) of the Child Act (43,44)
Minimum Age for Hazardous Work	Yes	18	Sections 12 and 13 of the Labor Act; Articles 22(3), 24 (1), and 25(1) of the Child Act (43,44)
Identification of Hazardous Occupations or Activities Prohibited for Children	Yes		Article 25(2) of the Child Act (43)
Prohibition of Forced Labor	Yes		Articles 10(1) and 13(2)(a) of the Labor Act; Articles 277–279 of the Penal Code; Article 13 of the Constitution (44-46)
Prohibition of Child Trafficking	Yes		Article 13(2) of the Labor Act; Article 22(3)(b) of the Child Act; Articles 276 and 278–282 of the Penal Code (43-45)
Prohibition of Commercial Sexual Exploitation of Children	Yes		Article 13(2)(b) of the Labor Act; Articles 22(3)(c)–(d), 22(4), and 25(2)(m) of the Child Act; Articles 258 and 276 of the Penal Code (43-45)
Prohibition of Using Children in Illicit Activities	Yes		Article 13(2)(c) of the Labor Act; Article 24(1) of the Child Act; Article 383(3)(d) of the Penal Code (43-45)
Minimum Age for Voluntary State Military Recruitment	Yes	18	Article 31(1) of the Child Act; Section 22 of the Sudan People's Liberation Army Act (43,47)
Prohibition of Compulsory Recruitment of Children by (State) Military	Yes		Article 31(1) of the Child Act; Sections 20 and 22(2) of the Sudan People's Liberation Army Act (43,47)
Prohibition of Military Recruitment by Non-state Armed Groups	Yes		Articles 31(1), 31(2) and 32 of the Child Act (43)
Compulsory Education Age	No	13	Article 9.1(b) of the General Education Act; Article 14(1) of the Child Act (43,48)
Free Public Education	Yes		Article 6(a) of the General Education Act; Article 13(4)(b) of the Labour Code; Article 14(1) of the Child Act; Article 29.2 of the Constitution (43,44,46,48)