

JUST RESULTS^{NB}

nuts and bolts for the new economy

Mineral supply chains mapping and labour market assessment¹

Masisi *territoire*, North Kivu and Nzibira, Walungu *territoire*, South Kivu
Democratic Republic of the Congo

May 27, 2020



Prepared by Just Results on behalf of the Partnership Against Child Exploitation (PACE) project (World Vision, War Child UK, Fifty Eight, Columbia University, Thomson Reuters Foundation, and the UN Global Compact Network UK), funded by the UK's Department for International Development (DFID). The views expressed do not necessarily reflect those of the PACE partners or the official policies of the UK Government.

Table of Contents

Executive Summary.....	3
Introduction	4
Purpose	4
Methodology.....	5
Social, political, and economic context.....	8
Political landscape.....	8
Conflict and armed actors.....	8
Economic landscape.....	10
Factors that hinder productivity	12
Mineral supply chain mapping.....	15
Overview of mineral supply chain and transport in the Kivus.....	15
Masisi	27
Nzibira	35
Cross-cutting issues.....	43
Alternative livelihoods	48
Masisi	48
Nzibira	52
Cross-cutting issues.....	56
Conclusions	64
Recommendations	65
Annexes.....	64
Annex 1. Community Profiles.....	70
Annex 2. Participants in study	70
Annex 3. Tools.....	70
Annex 4. Compiled data.....	70
Annex 5. Organizations active in the mineral supply chain	70

Executive Summary

This mineral supply chain mapping and labour market assessment covers the two intervention areas of the Partnership Against Child Exploitation (PACE) project in DRC, around Masisi in North Kivu province and Nzibira in South Kivu province. Findings are based on interviews, surveys, and focus groups with key actors, workers, and children along the mineral supply chain and in the surrounding communities at 16 mining communities as well as in Goma and Bukavu.

In these communities the mining sector, largely artisanal, is at the center of the regional economy. While larger mining towns like Rubaya and Nzibira support a lively set of commercial trading activities, most residential communities surrounding the mines are small and undeveloped, with few economic opportunities. Lack of infrastructure including roads, electricity, and clean water are key barriers to economic development in these communities. Agriculture has huge potential yet is underdeveloped and unproductive (especially in South Kivu).

As such the mining sector is the predominant source of income for many communities. At most sites, children – who often cannot afford to go to school – are present in the mining sites in various roles, both out of necessity or by their own choice, often due to peer pressure. The sector is permeated with rent seeking behavior and the artisanal miners at the bottom of the supply chain bear most of the costs, not due to oppression by any one group, but rather due to a cheese grater-like process by which formal and informal fees and cuts are taken at every level of the supply chain.

The region has been at center of decades-long conflict (going back to the Rwandan genocide and before) and simmering ethnic tensions dating to colonial times. Norms pertaining to the rule of law, ethical codes of conduct, economic fairness – have evolved in a unique way in these communities. For example, the assessment identified several norms relevant to project goals:

- Once someone has a child, they are considered an adult, no matter their age. This is a widespread social norm in the cities as well as the rural areas.
- Although most people don't think children should work in the mines, they often give them jobs in the mines as a way of helping more vulnerable children by providing them with a means of surviving.
- Children often don't want to go to school even when they are able to do so, because they may receive beatings (especially if they missed a day or are late for class, which can sometimes be miles away).
- Belief in witchcraft is prevalent, with cognitive and mental disabilities believed to be caused by spells and magic powers, often attributed to rebel groups like Raia Mutomboki in South Kivu.

There is not one point of leverage in this system – there are multiple places where pressure would need to be applied if change were to happen. If one takes an economic lens, leverage must be applied at each level of the supply chain. Taking a cultural lens, leverage must be applied across ethnic groups (many economic and civil society actors in local communities are associated with a single ethnicity).

There are no politics except the politics of power and conflict. Perhaps, however, a “network” lens – mapping the networks of relationships between people in key intermediary roles, and links to other sources of power (outside the region) could identify additional leverage points. This would be consistent with social capital theory, which tells us that strengthening weak and unlikely connections is the most

likely way to introduce change in a system. Expanding the frame of reference beyond direct supply chain dynamics could help to identify linkages between the interests of the people living in artisanal mining communities with those of more distant economic actors (both in DRC and internationally) as well as diaspora, to find win-win solutions for reinvesting in these communities.

Right now, the “peace is kept,” so to speak, by a series of payments made at every level of the mineral supply chain: to government actors, private sector, and rebel groups. The system of payments helps maintain a market equilibrium of sorts, that has arisen in the power vacuum to which the region has long succumbed. Simply put, there isn’t a lot of money to go around.

The COVID pandemic is both a devastating new reality in these communities (local mineral prices are plummeting even as they rise internationally) and a unique opportunity to introduce new behaviors, values, practices, and even economic opportunities and investments in the region. We recommend a systemic approach to identify forces for change and enable economic growth opportunities in these communities. We believe the activation of levers for economic change is a necessary first step to develop safe alternatives to the worst forms of child labour.

Introduction

Purpose

Partnership Against Child Exploitation (PACE) is a USAID funded project aimed at enabling boys and girls in the Central African Republic (CAR), the Democratic Republic of the Congo (DRC) and Ethiopia to enjoy their rights to protection from the worst forms of child labour (WFCL). The focus on WFCL specifically centers on boys and girls forcibly recruited into armed conflict, prostitution, or working in forced labor or hazardous work. Partnership Against Child Exploitation (PACE) is a consortium, led by World Vision and including War Child (WC), Columbia University (CU), Fifty Eight, Thomson Reuters Foundation, and UN Global Compact Network UK (GCN).

To support this program’s implementation in DRC, World Vision, Fifty Eight and War Child hired Just Results to conduct a mineral supply chain mapping and labour market assessment in the two intervention areas, around Masisi in North Kivu province and around Nzibira in South Kivu province. The assessment will contribute to the implementation of project activities related to two of the program’s objectives: Identifying safe alternatives to WFCL for children and their families and strengthening value chains to reduce and prevent WFCL (see Figure 1).

Figure 1. Mineral Supply chains mapping and labour market assessment supports PACE strategy

EAPEC Program Strategy

Outcome 1: Boys and girls exercise their agency and understand their rights not to be exploited, affirmed by positive social norms, supportive families and communities

Outcome 2: Girls, boys and their households have access to safe, age-, gender-and disability-appropriate alternatives (economic & non-economic) to WFCL. This will be achieved through the following outputs and associated activities:

- 2.1 Support children to go to school.
- 2.2 Youth and households' financial, business and other skills are strengthened to enhance employment options.
- 2.3 Private sector actors engage in activities to reduce and prevent WFCL and create pathways to safe employment.

Outcome 3: A stronger legal & policy environment supports the prevention & reduction of WFCL

Outcome 4: Private sector strengthen their value chain to reduce and prevent the worst forms of child labour. This will be achieved through the following outputs and associated activities:

- 4.1 Private sector actors and business networks supported to identify and share best practise in preventing & reducing the WFCL
- 4.2 Value chain analysed, traced and shared from the local level up to global consumers
- 4.3 Deeper understanding and documentation of how the informal sector feeds into formal supply chains
- 4.4 Context specific interventions that improve the enabling environment for the private sector to prevent & reduce the WFCL tested.

The assessment will inform the approach of activities under outcomes 2 and 4

Impact statement: *All children enjoy their rights to protection from the worst forms of child labour, through testing innovative strategies to understand what works to reduce and prevent the WFCL (in fragile contexts)*

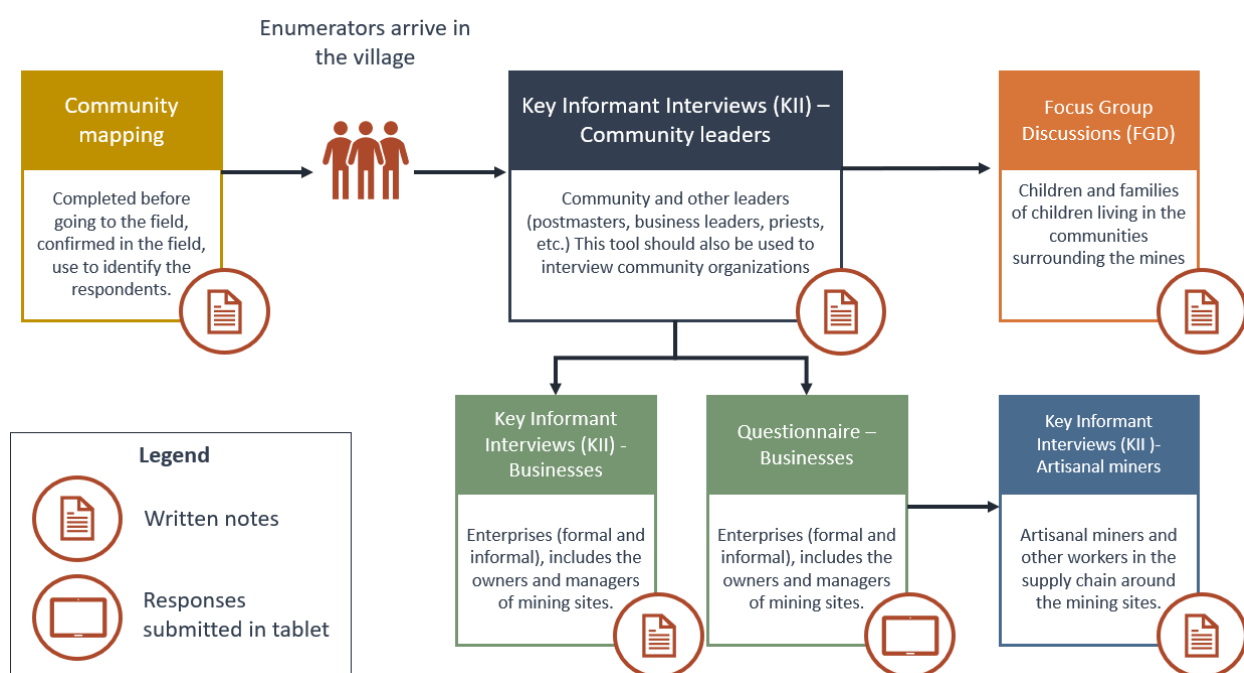
Methodology

Data collection was conducted by two teams, each consisting of a leader and three enumerators, one for each area of implementation. Members of the data collection team were from North Kivu and South Kivu, and spoke the local languages used in the communities they visited. Most had worked extensively in the mines, as artisanal miners and geologists.

The first area of implementation, operated by War Child UK, covers the mining communities in Masisi territory in North Kivu. In this area the assessment focused on mining sites in the coltan (tantalum) supply chain. The second area of implementation, operated by World Vision, covers the mining communities in and around Nzibira, Walungu Territory in South Kivu. In this area the assessment focused on mining sites in the Cassiterite (Tin), Gold, and Wolframite (Tungsten) supply chains.

The methodology featured a unified approach to data collection for the supply chain mapping and labor market assessment, designed to maximize coverage of key actors throughout the supply chain and in communities surrounding the mining sites visited by the team. A broad range of community and supply chain actors were targeted for data collection and different tools designed for each, as shown below in Figure 2. Prior to the field work, a brief community map was developed for each village, providing basic information on the local leaders, sectors, and organizations active in and around the community. This information was confirmed at each site and used to determine the allocation of interviews in the community.

Figure 2. Data collection approach at each location



The first interviewees were the community leaders, most often village chiefs. Based on insights from the community leaders the enumerators identified businesses – defined to include formal, semi-formal, and informal businesses, farmers, and managers of mining sites to interview and answer the questionnaire. In the villages, the research team also conducted focus groups with children, youth, and women. Finally, short interviews were conducted with artisanal miners and other workers operating at the mining sites. Table 1 shows the number of tools implemented in each community included in this assessment.

Table 1. Respondents by tools used in each community

Community	KII- Community Leaders	KII- Artisanal Miners	FGD- Children	FGD- Youth	FGD- Women	KII- Businesses	Questionnaire Businesses
North Kivu							
Goma	0	0	0	0	0	0	11
Kabingo	1	18	1	1	1	0	0
Karuba	1	17	1	1	1	12	2
Kibabi	1	6	1	1	1	2	3
Matanda	1	7	1	1	1	2	1
Mufunzi	1	12	0	0	0	1	0

Ngungu	1	16	1	1	1	11	7
Rubaya	1	9	1	1	1	5	5
Ruzirantaka	0	10	1	1	1	2	0
Subtotal – North Kivu	7	95	7	7	7	35	29
South Kivu							
Bukavu	0	0	0	0	0	8	18
Chaminyagu	1	10	1	1	0	0	0
Kanyungu	1	8	0	0	1	0	0
Mahamba	1	12	1	0	1	0	0
Mirhumba	1	8	1	0	1	0	0
Mushangi	1	7	0	0	1	0	0
Nzibira	0	0	0	0	0	1	11
Tchosho	1	10	1	1	0	0	0
Zola Zola	1	9	1	1	1	0	0
Subtotal – South Kivu	7	64	5	3	5	9	29
Women - Total	1	35	48%	46%	100%	4	8
Men - Total	13	125	52%	54%	0%	40	50
Total	14	159	12	10	12	44	58

Worth noting are three challenges faced during data collection:

- Despite approvals from all necessary government agencies and from Cooperama, Just Results was not given permission by SMB (*Société Minière de Bisunzu*)² to visit their PE 4731 concession at Rubaya. Nevertheless, the team was able to visit other sites around Rubaya which were operated solely by Cooperama.
- Upon arrival at each village the research team first had to speak with the local authorities. This meant that in most cases by the time the enumerators reached the mining sites, they had made sure no children were present. However, focus groups held in the villages around the sites allowed the team to speak with youth and children, including those who identified themselves as working in the mines. Additionally, many of the miners who were working at the sites spoke

² SMB website: <https://www.smb-sarl.com/fr/accueil/>

freely about the participation of children in the mineral supply chain and in their sites specifically.

- While the artisanal miners and children themselves were fairly open in what they would share, mining companies and *négociants* were generally reluctant to share information on children or detailed information on who they work with or buy and sell from. Our local experts believe this is based on fear that their products would be classified as conflict minerals, or because they are smuggling minerals to Rwanda and are afraid of being reported to the authorities.

Social, political, and economic context

Political landscape

PACE's two areas of implementation are Masisi territory in North Kivu, and Nzibira and Walungu territory in South Kivu. North and South Kivu are two of the eastern most provinces of the Democratic Republic of the Congo (DRC), bordering Uganda, Rwanda, and Burundi in what is known as Africa's Great Lakes Region. The combined population of the Kivus is approximately 11 million, approximately 12.5% of the DRC's total population of 87.5 million. The official languages spoken in the Kivus are French and Swahili, with Hunde and Kinyarwanda in North Kivu and (Ma)Shi and Lega in South Kivu also widely spoken.

Goma, North Kivu's administrative capital, and Bukavu, South Kivu's administrative capital, each have a population of around one million, representing most of the urban population in these two provinces. Other than a few smaller urban centers, the rest of the population resides in rural areas. North Kivu is divided into six territories and South Kivu is divided into eight territories and four administrative districts.

Conflict and armed actors

The Kivus have been at the center of conflict in the DRC for nearly three decades, leaving its scars on every part of life from some of the highest levels of sexual and gender-based violence in the world to farmer crop choice. In fact, since the ethnic conflicts in the early 1990s (instigated in large part by the Rwandan genocide) that led up to the First and Second Congo Wars in 1996-1997 and 1998-2003, the Kivus have been the focal point of conflict in the whole central African region. In 2002 – after nearly a decade of conflict had led to over 1 million direct casualties and an estimated several million more in indirect casualties – the Sun City Agreement led to peace between many of the actors in the conflict, and it seemed as though the Kivus might begin to have some respite from conflict.³

However, only a year later the Kivu Conflict broke out, between the Congolese army (FARDC) and associated militias (include many local defense groups known as the Mai-Mai militias), the Rwandan Hutu group *Forces démocratiques de libération du Rwanda* (FDLR) and its allies, who had not been included in the Sun City Agreement, and later (in 2006) a Tutsi group *Congrès national pour la défense du peuple* (CNDP). This conflict has lasted in various forms with a shifting array of actors and militia

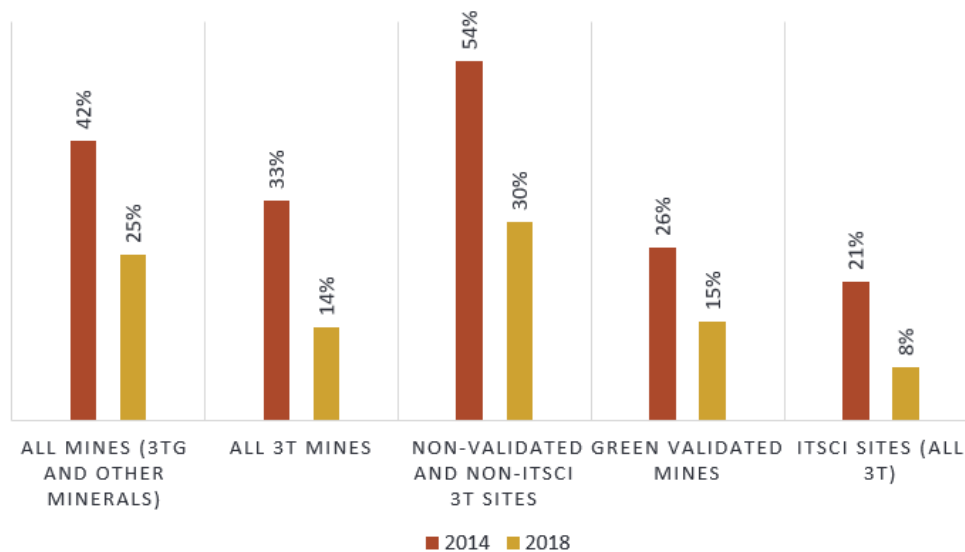
³ Gavin Lyall. "Rebellion and Conflict Minerals in North Kivu," ACCORD, April 24 2017. <https://www.accord.org.za/conflict-trends/rebellion-conflict-minerals-north-kivu/>

groups involved, until the present, leading to perhaps hundreds of thousands of deaths (estimates vary widely) and over a million internally displaced people (IDPs).⁴

Currently, over 130 armed groups are present in the Kivus (though just over 70 are currently active) including rebel groups and Mai-Mai militias.⁵ The most violent in recent years has been the Ugandan Islamist rebel group Allied Democratic Forces (ADF) operating in North Kivu mostly around Beni territory. The FARDC launched a full-scale offensive against the ADF in October 2019 which is still currently underway. This offensive has spurred attacks by the ADF which have led to two successive months of the highest number of civilian casualties in November and December 2019 since the Congo Research Group and Human Rights Watch’s Kivu Security Tracker started measuring this in 2017. However, the conflict in Beni territory is the exception rather than the rule, as conflict in the Kivus has declined generally in recent years.

Throughout the series of conflicts that have plagued the Kivus, artisanal mining has played a key role in financing the conflict either via “taxes” paid to FARDC and rebel groups, or direct control of sites by armed groups. Armed actors are still a common presence at mining sites in the Kivus, though declining. IPIS annual study of artisanal mines in Eastern DRC found that armed presence at the mining sites (either occupation or interference, such as claiming taxation) is most prevalent in North Kivu (44%) and South Kivu (37%) compared to other provinces.

Figure 3. Reduced levels of armed actors active at mining sites in North and South Kivu⁶



Sites around Masisi and Nzibira in general, seem to be largely free of armed interference based on IPIS mapping (though occasional harassment from armed groups was mentioned by miners interviewed at

⁴ Human Rights Watch. ““You Will Be Punished” Attacks on Civilians in Eastern Congo,” 2009. https://reliefweb.int/sites/reliefweb.int/files/resources/98C731780E8592854925768C000D13FE-Full_Report.pdf

⁵ Human Rights Watch. “DR Congo: 1,900 Civilians Killed in Kivus Over 2 Years,” August 14, 2019. <https://www.hrw.org/news/2019/08/14/dr-congo-1900-civilians-killed-kivus-over-2-years#>

⁶ IPIS. “Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing,” April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

several sites near Nzibira),⁷ and armed presence at mining sites does not seem to correlate with conflict areas.⁸ However, even in non-conflict zones, artisanal mining revenues are used to fund armed groups involved in conflict in other areas.⁹ One way in which this happens, mentioned several times during the field work, is that armed groups- driven out of mining sites that they directly control – will hire *négociants* to work for them as a way to continue tapping the region’s mineral wealth. However, international efforts in recent years to create more transparency in mineral supply chains by reducing the purchase of conflict minerals does seem to be playing a role in reducing the levels of armed actors interfering at mining sites.¹⁰

Recent data shows that despite the slowdown in conflict in the Kivus, it is still one of the deadliest regions (if not the deadliest) in the world. In 2018, 8.38 civilians were killed per 100,000 people in the Kivus. For comparison, the 2018 death rate in Nigeria’s Borno state’s (the area where Boko Haram and Al Qaeda are most active in Nigeria) was 6.87 per 100,000, and Yemen’s was 4.13 per 100,000.¹¹ PACE implementation areas around Masisi and Nzibira are among the few areas in the Kivus where there is not a strong militia presence at the moment, however Masisi in particular is still an area that has seen frequent violent incidents over the past year.¹² One study found that 99.1% (897/905) of households in Masisi reported at least one member subjected to violence (though this is somewhat outdated, from 2010).¹³

Economic landscape

The economy of the Kivus is as dynamic as it is troubled, with mineral supply chains in particular playing a key role in the global economy. While employing a relatively slim percentage of the population, mining is the primary driver of the growth in the economy by bringing in foreign currency through formal and informal exports, which in turn is spent locally on goods and services. For the DRC overall, the mining sector is the main economic driver– extractive industries contribute 98% to exports, 18% to GDP, and 18% to government revenues.¹⁴ The Kivus are at the heart of several of DRC’s most important mining

⁷ IPIS. “Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing,” April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

⁸ IPIS. “Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing,” April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

⁹ ESRI. “The Kivu Conflict,” 2018.

<https://www.arcgis.com/apps/MapJournal/index.html?appid=cb09d24f4caf4a8e921039028329f21c>

¹⁰ IPIS. “Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing,” April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

¹¹ Congo Research Group. “Congo, Forgotten The Numbers Behind Africa’s Longest Humanitarian Crisis,” August 2019. <https://kivusecurity.nyc3.digitaloceanspaces.com/reports/28/KST%20biannual%20report%20August%202012%20%281%29.pdf>

¹² Kivu Security Tracker. Accessed February 7, 2020. <https://kivusecurity.org/map#>

¹³ K. P. Iberty, E. Grellety; Y.C. Lin et. al. "Violence against civilians and access to health care in North Kivu, Democratic Republic of Congo: three cross-sectional surveys," 2010, *Conflict and Health*. 4: 17. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2990729/>

¹⁴EITI. “Democratic Republic of the Congo,” Last updated January 6, 2020. https://eiti.org/es/implementing_country/5

value chains: i.e. gold and 3Ts – tin (cassiterite), tungsten (wolframite), tantalum (coltan). Although there are industrial mining sites related to the 3Ts in North Kivu and to gold in South Kivu, most mining in DRC is artisanal.

Outside of mining, most of the economy is focused on agriculture (the primary source of employment), transportation, and commerce. Agriculture in North and South Kivu holds great potential due to the rich soil and plentiful arable land in the region. However, most farming is carried out by smallholder farmers and agriculture remains highly unproductive due to numerous constraints – including lack of inputs (e.g. quality seeds and fertilizer), poor access to finance, poor agricultural practices, and remaining conflict. With the right supply of inputs and use of modern agricultural practices, agriculture in the Kivus can be significantly more productive – with estimated yield increases of up to 3-4 times. Land tenure is a major barrier for agricultural development, as most farmers are limited to small plots of land and many people have no access to land ownership at all. This issue is a major challenge in the Kivus, dating back to the colonial period when the Belgians rewarded “Banyarwanda” (Hutu and Tutsi) workers migrating from Rwanda by giving them control over much of the farmland, leaving most of the population without access to land beyond small plots enough only for subsistence farming. Commerce is a dynamic and growing sector in Bukavu and in Goma, however in rural areas it is relegated almost exclusively to small commerce by street sellers and farmers. The transportation sector is largely contingent on the mining sector and is hampered by security issues and the poor quality of infrastructure. Most businesses, outside of mining companies and some larger businesses in cities, are informal.

Rapid urbanization has played an important role in shaping the economic landscape of the Kivus. Goma and Bukavu have always been the primary cities in the Lake Kivu region, but have grown dramatically in population over the past ten years, doubling or nearly doubling in size over the past decade due to organic population growth (driven by large reductions in infant mortality and persistently high fertility rates), and rural to urban migration (driven by the search for economic opportunities and by displacement from conflict). Bukavu and Goma had populations in 2010 of 643,432 and 354,604 respectively. Now in 2020 they have estimated populations of 1,078,002 and 634,197 respectively and are projected to double again in population by 2035.¹⁵

While Bukavu and Goma represent the vast majority of the 17% of the population of North and South Kivu classified as urban, another important aspect of urbanization has been the rise of boom towns situated around mining and refugee camps.¹⁶ Within this assessment’s target area, the mining boom town of Rubaya in Masisi territory is a prime example of this. Rubaya has a population of 70,000 focused around the rich coltan deposits situated near the town, as well as in two nearby camps of internally displaced people (IDPs). Rubaya is a microcosm of the history of conflict in the region, characterized by ethnic conflicts between the self-claimed *autochthonous* (Hunde and Tembo) populations and the “Banyarwanda” who were first brought over as workers in colonial times and then reinforced by people displaced during the Rwandan genocide; and by conflicts within the “Banyarwanda” between Hutus and Tutsis. Rubaya has often been at the center of conflict over past two decades, at one point serving as a

¹⁵ United Nations Department of Economic and Social Affairs. “2018 Revision of World Urbanization Prospects,” 2018. <https://population.un.org/wup/>

¹⁶ World Bank. “Democratic Republic of Congo Urbanization Review Productive and Inclusive Cities for an Emerging Democratic Republic of Congo,” 2018. <https://openknowledge.worldbank.org/bitstream/handle/10986/28931/9781464812033.pdf?sequence=2>

base for the CNDP militias. The population is an ethnic mixing pot of Tutsi, Hunde, Tembo, Shi and Kano people presided over by a Hutu elite, with an economy largely driven by the coltan supply chain.¹⁷

While boomtowns like Rubaya have developed around some of the richest mining area, most artisanal mining is conducted in a much more rural context (especially in South Kivu) near small villages with populations in the hundreds. These rural economies, even around thriving mining sites, have a much bleaker economic outlook than their boomtown counterparts. The economy outside of mining and transportation of mineral products at first glance seems non-existent. However, there are opportunities to build in small ways upon the minimal economic activity that is present. For example, there are individuals engaged in small-scale commerce, selling items brought back from Goma and Bukavu by returning transporters – such as phone airtime cards, batteries, clothing items – and farmers selling their surplus crops and produce, or even baking pastries to sell. Our team also found that there is demand – often unmet – for many services such as machinists to drain water from flooded mining pits, mechanics to repair motorcycles, and carpenters and masons for construction work.

Factors that hinder productivity

Many factors hinder business productivity and growth in the Kivus. The most important are related to the lack of infrastructure, opaque formal and informal taxation, and access to finance.

Physical infrastructure is very poor in DRC in general, and the Kivus are no exception. Transportation is characterized by a lack of road and waterway infrastructure – despite these two methods accounting for nearly all transportation – with limited road access outside of urban centers. While transportation by boat from Goma to Bukavu¹⁸ has become increasingly important, waterway infrastructure and capacity are still limited.¹⁹ According to World Bank's Logistics Performance Index 2018, DRC ranks 138 out of 160 measured countries for infrastructure quality and 133 for timeliness of shipments.^[00] The World Economic Forum's 2017-2018 Executive Opinion Survey, ranks the quality of DRC's roads²⁰ second worst in the world only to Mauritania.^[00] ICT and power infrastructure are likewise limited with only 19% DRC's population having access to electricity²¹ These challenges are equally prevalent in the Kivus as the rest of

¹⁷ Karen Büscher. "Urbanisation and the Political Geographies of Violent Struggle for Power and Control : Mining Boomtowns in Eastern Congo," *Revue internationale de politique de développement*, October 2018.

<https://journals.openedition.org/poldev/2769>

¹⁸ The New Times. "Lake Kivu becomes major transport hub," July 13, 2018.

<https://www.newtimes.co.rw/business/lake-kivu-becomes-major-transport-hub>

Rachel Blum, Brandy Jones, and Raphael Ngeleza. "Overview of Youth Development Perspectives in the Eastern Democratic Republic of Congo," USAID, July 2017.

<https://www.youthpower.org/sites/default/files/YouthPower/resources/Overview%20of%20Youth%20Development%20Perspectives%20in%20the%20Eastern%20Democratic%20Republic%20of%20Congo.pdf>

¹⁹World Bank. "Logistics Performance Index," 2018. <https://lpi.worldbank.org/international/global/2018>

²⁰ World Economic Forum. "Quality of Roads," 2017. http://reports.weforum.org/pdf/gci-2017-2018-scorecard/WEF_GCI_2017_2018_Scorecard_EOSQ057.pdf

²¹ World Bank Data. "Mobile cellular subscriptions (per 100 people)," Accessed September 26, 2019.

<https://data.worldbank.org/>

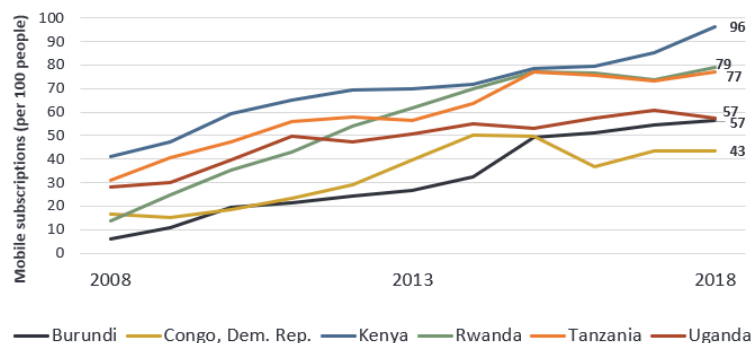
Rachel Blum, Brandy Jones, and Raphael Ngeleza. "Overview of Youth Development Perspectives in the Eastern Democratic Republic of Congo," USAID, July 2017.

<https://www.youthpower.org/sites/default/files/YouthPower/resources/Overview%20of%20Youth%20Development%20Perspectives%20in%20the%20Eastern%20Democratic%20Republic%20of%20Congo.pdf> World Bank Data.

"Access to electricity (% of population)," Accessed September 26, 2019. <https://data.worldbank.org/>

DRC. DRC trails significantly behind its African peers in mobile phone penetration. Outside of major urban areas cell coverage is often close to non-existent.²²

Figure 4. DRC trails its neighbors in mobile phone penetration²³



Access to clean water and basic sanitation is²⁴rare, especially among rural communities.²⁵ Just 42% of the population of DRC has access to safe drinking water, with access in rural areas as low as 29%.²⁶ Only 20% of the population of DRC have access to basic sanitation services.

Rampant informal taxation and

corruption are a burden on businesses of all sizes, in both the formal and informal sectors.

Transportation in particular bears substantial added costs. One of the largest sources of informal taxation, and a major barrier to the transportation of all kinds of goods in North and South Kivu, are militarized roadblocks operated by both government and non-government actors (mostly military groups but also some other actors such as cooperatives). A report by the International Peace Information Service (IPIS), focused on the political economy of roadblocks in North and South Kivu, identified nearly 800 such roadblocks operated by “entrepreneurs of imposition” who use their strategic position along key roads to make a profit from passing travelers.²⁷

In the communities, individuals and businesses also suffer from constant harassment and theft by state actors, including police and military. The line between formal and informal taxation is not always clear, as both individuals and businesses perceive many of the payments they make (i.e. taxes and fees) as “formal” even where they are in fact informal payments or substantially inflated payments from what should be legally charged. It has been estimated that up to 90% of taxes and fees (formal and informal)

²² Rachel Blum, Brandy Jones, and Raphael Ngeleza. “Overview of Youth Development Perspectives in the Eastern Democratic Republic of Congo,” USAID, July 2017.

<https://www.youthpower.org/sites/default/files/YouthPower/resources/Overview%20of%20Youth%20Development%20Perspectives%20in%20the%20Eastern%20Democratic%20Republic%20Of%20Congo.pdf>

²³ Data: World Bank

²⁴ Josue Bahati Chishugi and Yongxin Xu. “Water supply and sanitation in the Democratic Republic of the Congo,” 2010.

https://www.researchgate.net/publication/202342601_Water_supply_and_sanitation_in_the_Democratic_Republic_of_the_Congo

²⁵ Global Waters.org. “D.R. Congo,” Accessed September 26, 2019.

<https://www.globalwaters.org/WhereWeWork/Africa/DRC>

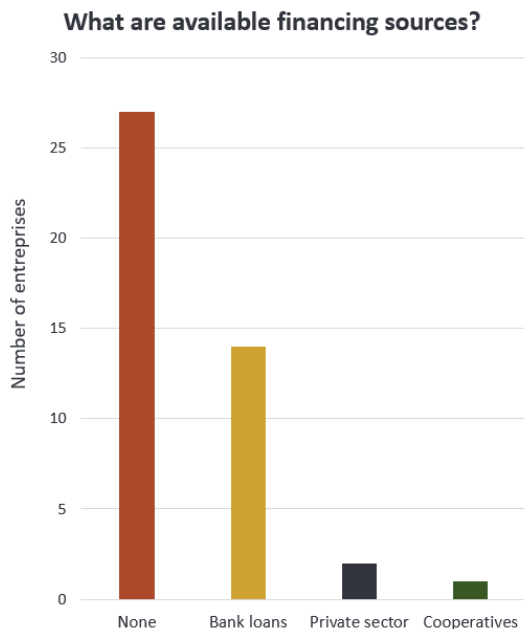
We Are Water Foundation. “Drinking water, sanitation and hygiene to eliminate the cholera in rural Democratic Republic of the Congo,” Accessed September 26, 2019. https://www.wearewater.org/en/drinking-water-sanitation-and-hygiene-to-eliminate-the-cholera-in-rural-democratic-republic-of-the-congo_253220

²⁶ World Bank Data. “People using at least basic sanitation services (% of population) - Congo, Dem. Rep.,” Accessed September 26, 2019. <https://data.worldbank.org/>

²⁷ Peer Schouten, Janvier Murairi, Saidi Kubuya. “‘Everything that moves will be taxed’: the political economy of roadblocks in North and South Kivu”, International Peace Information Service, November 2017, <https://reliefweb.int/sites/reliefweb.int/files/resources/1711-DRC-roadblocks-English.pdf>

never reach the government.²⁸ As a result of these factors, the tax burden on businesses and on individuals in North and South Kivu is significantly higher than the formal corporate tax rate of 30-40%.²⁹ The average tax burden on individuals (both formal and informal) has been estimated to be around 16% of household expenditures in DRC as a whole and up to 20% in Goma. Female-headed households bear a disproportionate tax burden as a percentage of household income compared to male-headed households.³⁰

Figure 5. Most businesses interviewed lack access to finance in their communities



Lack of access to finance is a persistent problem in the Kivus and DRC as a whole. Even in urban areas few options are available, and where they are they often have trouble gaining the trust of the people. United Nations Development Program (UNDP) reports that only 12% of people in DRC use formal banking services, 5% use savings and loan cooperatives, and 4% use microfinance. A recent series of bank failures, including the closing *Mutuelle d’Epargne et de Crédit du Congo* (MECRECO) in Goma, has led to increased distrust in financial institutions as many lost what little savings they had.³¹ In key sectors such as mining and agriculture, makeshift financing mechanisms have arisen to fill the void. For instance, *négociants* and cooperatives play a financing role for artisanal miners, for example for the purchase of ore to clean and crush and for the purchase of equipment. In North Kivu there are instances of farmers pooling resources to buy enhanced seeds and fertilizer in the planting season. Businesses interviewed generally lacked any access to finance in their communities, though some larger businesses in the cities had access to bank loans.

²⁸Laura Paler, Wilson Prichard, Raul Sanchez de la Sierra, and Cyrus Samii. “Survey on Total Tax Burden in the DRC, Final Report,” Institute for Development Studies, April 13, 2017 . https://www.ictd.ac/wp-content/uploads/2019/06/DFID_DRC_TaxBurden_Final.pdf

²⁹ HG Legal Resources. “Highlights of Corporate Taxes in the Democratic Republic of Congo,” Accessed February 4, 2020. <https://www.hg.org/legal-articles/highlights-of-corporate-taxes-in-the-democratic-republic-of-congo-27418>

³⁰ Laura Paler, Wilson Prichard, Raul Sanchez de la Sierra, and Cyrus Samii. “Survey on Total Tax Burden in the DRC, Final Report,” Institute for Development Studies, April 13, 2017 . https://www.ictd.ac/wp-content/uploads/2019/06/DFID_DRC_TaxBurden_Final.pdf

³¹ Mariam Aboubakar Esperance. “Wary Congolese Move Their Money Elsewhere As Banks Close, Customers Lose Deposits,” Global Press Journal, November 2017. <https://globalpressjournal.com/africa/democratic-republic-of-congo/wary-congolese-move-money-elsewhere-banks-close-customers-lose-deposits/>

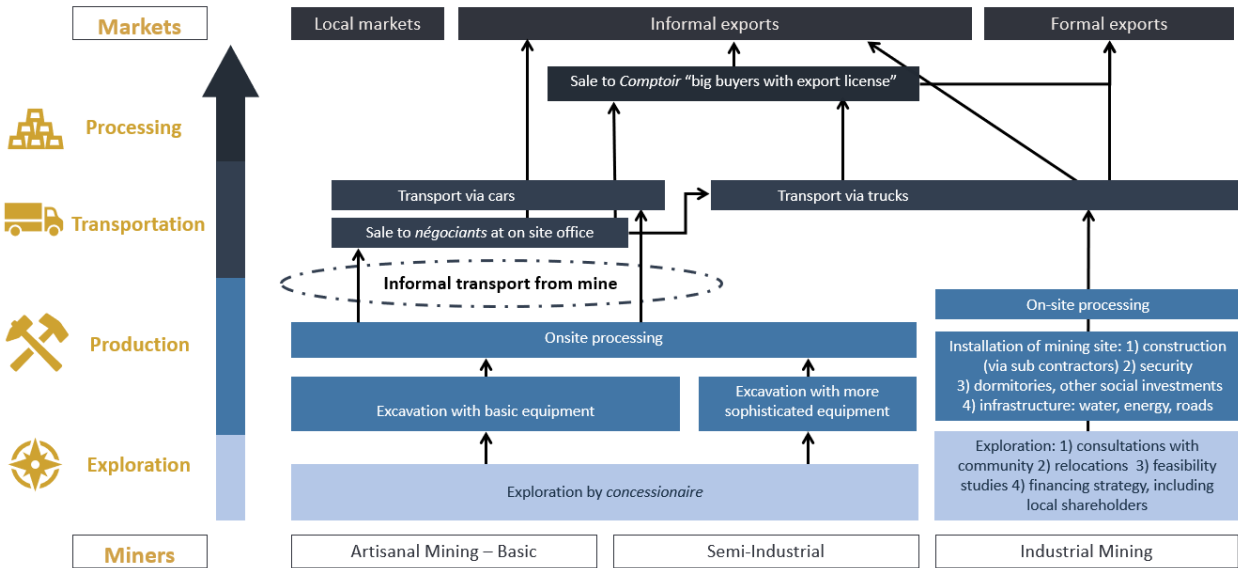
Mineral supply chain mapping

Overview of mineral supply chain and transport in the Kivus

Value chain framework

The Just Results team used value chain maps as a tool to understand and analyze the mineral supply chain. A generic mineral value chain map, shown below in Figure 6, demonstrates how minerals flow upward through three production channels (in this case artisanal mining, semi-industrial mining, and industrial mining) to end markets. In a typical value chain, the preferences of consumers in end markets determine the quality, price points, and process at all levels of the value chain. However, the mineral supply chain in Eastern DRC is complex and largely opaque, limiting the flow of market information and price signals down each channel. This problem, along with high transaction costs at every level of the chain, leads to low prices in country and disproportionate shares of profits falling outside DRC, as is described in more detail below.

Figure 6. Example of a mineral value chain map



Mining governance

The mining sector in DRC has been a driver of the economy going back to colonial times, and since independence governance of the sector has become one of the primary issues creating political and economic tension. A series of updates have been made to the Mining Code over the past few decades – most recently in 2018– yet there is one constant: mining in DRC is deeply corrupt, and the miners at the bottom of the supply chain bear the brunt of its costs.³²

³² Key points of the new Mining Code are reduced length of mining concessions to 25 years, increased state equity and taxes on mining across the board, an additional 10% royalty for the state for strategic minerals, and 50% tax on excess profits.

Table 2 below shows the key government actors related to artisanal mining in DRC, along with descriptions of their official roles per Congolese law. While many of these roles are in fact carried out in some shape or form, most of these entities are far from functional, or else primarily function as tax collection entities (for formal and informal taxes). The Division of Mines and SAEMAPE in the Kivus are especially egregious in this regard, often demanding “motivation” payments to tag minerals and adding overcharging for formal taxes without giving a receipt.³³ Many of the roles are not carried out at all. For instance, in the Kivus, SAEMAPE rarely carries out any training for artisanal miners.

Table 2. Key government actors in mineral supply chain and their official roles³⁴

Actor	Role
National Ministry of Mines	<ul style="list-style-type: none"> • Creation of mining concessions/exploitation and exploration zones) • Granting and withdrawal of approvals for trade and processing of mineral products
Provincial Division of Mines	<ul style="list-style-type: none"> • Issuance of <i>carte de creuseur</i> • Issuance of <i>carte négociant</i> • Collection of provincial taxes
Mining Registry (<i>Le Cadastre Minier</i> or CAMI)	<ul style="list-style-type: none"> • Registration of mining zones in the national registry
SAEMAPE (<i>Service d’Assistance et d’Encadrement des Mines Artisanales et de Petit Echelle</i>)	<ul style="list-style-type: none"> • Formerly SAESSCAM (<i>Service d’Assistance et Encadrement d’Artisanal et Smallscale Mining</i>), reorganized as SAEMAPE by Decree 17/009 as of April 4, 2017³⁵ • Monitor and support artisanal mining exploitations • Register and tag mineral production at artisanal mining sites • Provide training and technical assistance to artisanal miners

Mining Review Africa. “DRC Mining Code: Addressing the elephant in the room,” September 4, 2019.

<https://www.miningreview.com/copper-2/drc-mining-code-addressing-the-elephant-in-the-room/>

³³ IPIS. “Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing,” April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

³⁴ PACT. “PROMINES: Study Artisanal Mining in the Democratic Republic of Congo,” July 2010.

<http://congominer.org/system/attachments/assets/000/000/349/original/PACT-2010-ProminesStudyArtisanalMiningDRC.pdf?1430928581>

IPIS. “Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing,” April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

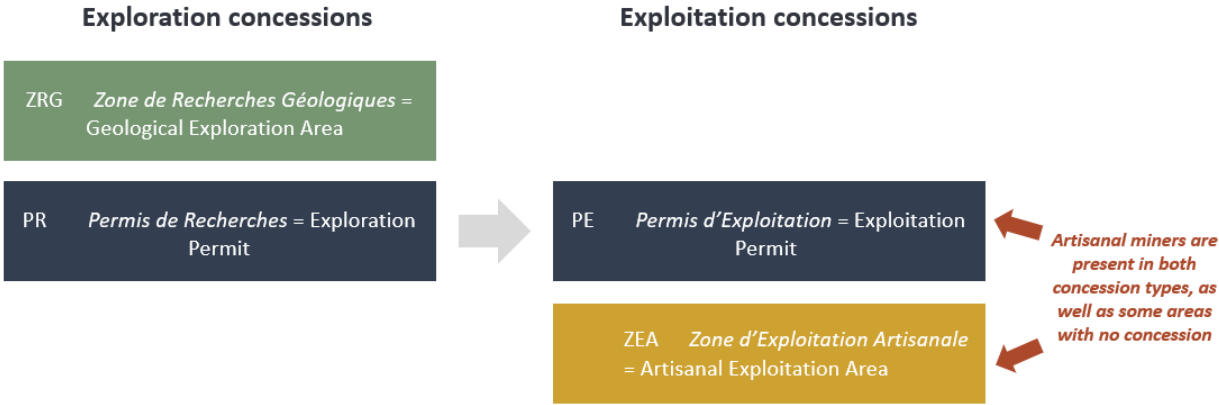
³⁵ World Bank. “Implementation Completion and Results Report IDA H5890 TF10744 on A Grant in The Amount Of SDR 33.1 Million (Us\$50 Million Equivalent) To The Democratic Republic of Congo For The Growth With Governance In The Mineral Sector (P106982),” April 18, 2019.

<http://documents.worldbank.org/curated/en/872481557158663580/text/Democratic-Republic-of-Congo-Growth-with-Governance-in-the-Mineral-Sector-Project.txt>

CEEC (<i>Centre d’Evaluation, d’Expertise et de Certification</i>)	<ul style="list-style-type: none"> • Certify precious and semiprecious minerals • Monitor trade of minerals
Police of mines	<ul style="list-style-type: none"> • Provide security and keep the peace at mining sites

Mineral rights in the DRC are doled out through concessions by the government (25 years long, but renewable as of the 2018 Mineral Code). There are 4 primary concession types in the areas covered in this assessment (these are also the most important country-wide). Two are for exploitation and two for exploration.

Figure 7. Primary concession types in DRC³⁶



PE concessions are those granted to industrial mining companies for exploitation. In this Kivus, the primary industrial mining company is the Canadian firm, Banro, which has extensive gold mining operations in South Kivu. In the target areas for this assessment no industrial mining is present. However, so called “semi-industrial” mining companies also are granted PE concession. These “semi-industrial” Congolese companies are those which in theory should be industrial companies but do not have the capacity to carry out this level of operation. Instead they combine some higher-level operations along with allowing artisanal miners to operate on their concession in exchange for the sole right to purchase the minerals. Important examples in Masisi territory are the privately-owned SMB (*Société Minière de Bisunzu*) with a rich PE concession around Rubaya, and the state-owned enterprise SAKIMA (*Société Aurifère du Kivu et du Maniema*).

ZEA concessions are those that have been set aside solely for artisanal mining, usually independent miners, or those hired by *négociants*, or local landowners (more on this below). These sites generally have lower production. Many artisanal miners also work illegally on PE sites, though often this is overlooked and legitimized by government authorities willing to allow them to continue to operate to expand their informal tax base. In the Kivus, artisanal mining is the dominant form of mining, whether as part of “semi-industrial” operations or as independent artisanal operations.

³⁶ IPIS. “Mining concessions in the DR Congo,” August 7, 2010. <https://ipisresearch.be/publication/mining-concessions-dr-congo/>

PR concessions are the predecessor to the PE concession and allow an industrial company the rights to explore an area for mineral deposits. ZRG concessions are also exploratory in nature, but for research purposes by the government, rather than for immediate exploitation by an industrial mining company.

In addition to these mining concessions, it is common to have overlapping customary ownership rights over tracts of land which may be on larger mineral concessions or on land where there is no legal mining concession. Owners of these tracts, called *cessionnaires*, often hire artisanal miners to work in their pits, sometimes working alongside them as well.

Cooperatives

At the local level, cooperatives are among the most prominent actors in the mineral supply chain. While cooperative membership has been legally mandatory since 2010, cooperatives are present at only 74% of sites, and even in sites where they are present, many miners are not members.³⁷ Few artisanal miners had much good to say about the cooperatives, claiming they do little to nothing for their members. Cooperative membership is often drawn along ethnic lines, and many cooperatives were started by local strongmen to promote their own interests. Rarely do they provide their members with equipment or technical assistance, instead acting primarily to enforce local monopolies on mineral trade at sites they control.³⁸ Non-miners in the communities visited accused cooperatives of predatory behavior, such as illegally seizing farmers' land where minerals have been discovered.

The supply chain at the mining site

The point of origin for the mineral supply chain are the pits where artisanal miners work to extract the minerals from the earth. In North Kivu and South Kivu there are 2,328 confirmed mining sites employing nearly half a million artisanal miners, with the number of workers in each site ranging from less than 10 to thousands.³⁹

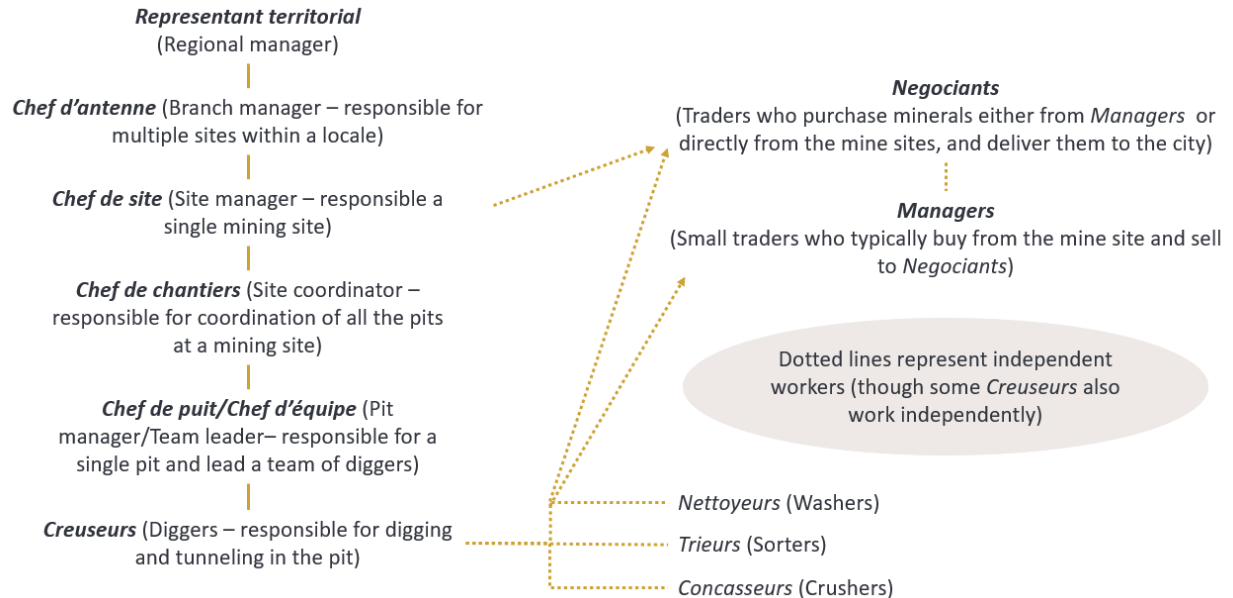
The structure of the supply chain at the site level may vary slightly, but on the whole the categories of roles and structure of authority are similar throughout the Kivus. Figure 8 below provides the primary roles found at a typical mining site. Some roles like *Representant territorial* and *Chef d'antenne* are only present in areas controlled by a larger entity, such as SMB or SAKIMA.

³⁷ IPIS. "Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing," April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

³⁸ IPIS. "Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing," April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

³⁹ IPIS. "Open Data," Accessed April 15, 2020 . <https://ipisresearch.be/home/conflict-mapping/maps/open-data/>

Figure 8. Roles represented at a typical mining site⁴⁰



At the site level, there may be a *Chef de site* who oversees a large mining site that may cover a broad area. Supporting the *Chef de site* is the *Chef de chantiers* who is responsible for coordination and day to day management of all the pits at the mining site. Each pit has a *Chef de puit* or *Chef d'équipe* who is the manager and team leader of a group of *creuseurs* – the diggers and shovelers who work in the pit either tunneling in search of minerals or shoveling away the debris that is brought up from the tunnels. There can be anywhere from one to dozens of pits at a mining site, with each pit having anywhere from one to over 100 *creuseurs*. The shovelers are sometimes distinguished from the other *creuseurs* as *pelleteurs* and may make less money (though they also take less risks). These leaders at the site level are chosen through elections by the *creuseurs* and generally strongly identify with them. In interviews with artisanal miners it was common for a *Chef de chantiers* or *Chef de puit* to initially identify himself only as *creuseur* and only reveal his role after being asked more detailed questions about his day to day activities. *Creuseurs* are generally hired by the *Chef de chantiers* or else work independently either for a *négociant* or for themselves. Depending on the site, there may be *concessionnaire* who is the local land owner who charges a percentage from the *creuseurs* to operate on his land or else hires them directly (this is generally in more rural sites such as in South Kivu, as opposed to the semi-industrial sites in North Kivu which follow the structure presented in Figure 6 more closely). Sometimes the *concessionnaire* also works himself as a *creuseur* alongside the others. Technically all *creuseurs* are required to have a *carte de creuseur* from the Division of Mines, a document which shows that its bearer is legally allowed to mine in artisanal mining zones. However, of 711 mining sites visited by IPS from 2016 to 2018, less than half of the *creuseurs* had the *carte de creuseur* at 65% of the sites, and at only 6% of the sites did over 75% of *creuseurs* present have the *carte de creuseur*.⁴¹ The artisanal miners

⁴⁰ These roles can vary by site, depending – for example – on the level of control by a cooperative or concessionaire at the site

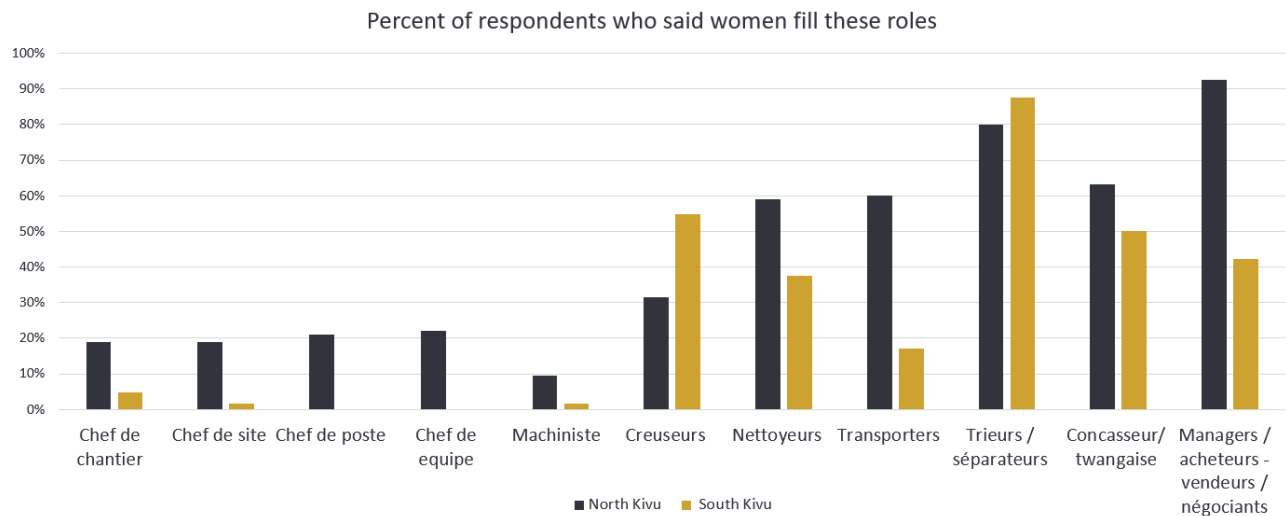
⁴¹ IPIS. "Mapping artisanal mining areas and mineral supply chains in eastern DR Congo Impact of armed interference & responsible sourcing," April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

interviewed by the Just Results research team cited high costs as a primary reason for not obtaining the *carte de creuseur* (\$10 annually). It seems that the cost of paying the official from the division of mines directly may be cheaper in many cases or at least more easily accessible to rural artisanal miners.

Generally working independently at the sites are those who take the ore debris from the *creuseurs* and sort (the *trieurs*), wash (the *nettoyeurs* or *laveurs*), and crush (the *concasseurs*) the minerals in order to extract the ore for sale. Sometimes an independent *creuseur* will perform one or more of these tasks himself in addition to digging for ore. In most cases however, these tasks are segmented among different workers. There are also those who play the role of transporter within the mining site (as opposed to those who transport minerals from the mining site). Small buyers and sellers and small traders known as *managers* purchase the ore, usually once it has gone through the process of sorting, washing, and crushing. In most cases they take the ore from the mining site to the nearest village and sell it to *négociants*, big traders who move minerals to the cities (more on this below). In some cases, *négociants* will come directly to sites and purchase the ore themselves, or will have prearranged agreements with *creuseurs* who work for them.

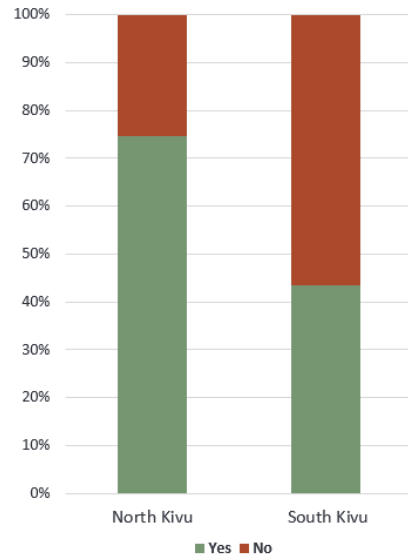
It is in these roles (*nettoyeurs*, *trieurs*, *concasseur*) that we find many women, children, and workers with disabilities. Youth, ages 15 and older are more likely to start working in more difficult roles like *creuseur*. In South Kivu, the role of *concasseur* is especially dominated by women, called locally *mama twangaise*. Women are rarely in leadership roles in the mines, but our respondents in North Kivu were much more likely to report this happening on occasion than those in South Kivu.

Figure 9. Women frequently work at the artisanal mining sites, but are rarely in leadership roles



People with disabilities are also often in similar roles (*nettoyeurs*, *trieurs*, *concasseur*), as are children at some sites (more on this in the sections below). There are many people with mental disabilities and even more who are physically impaired (due to numerous accidents) working in almost every role except

Figure 10. Can those who are disabled work in the mines?

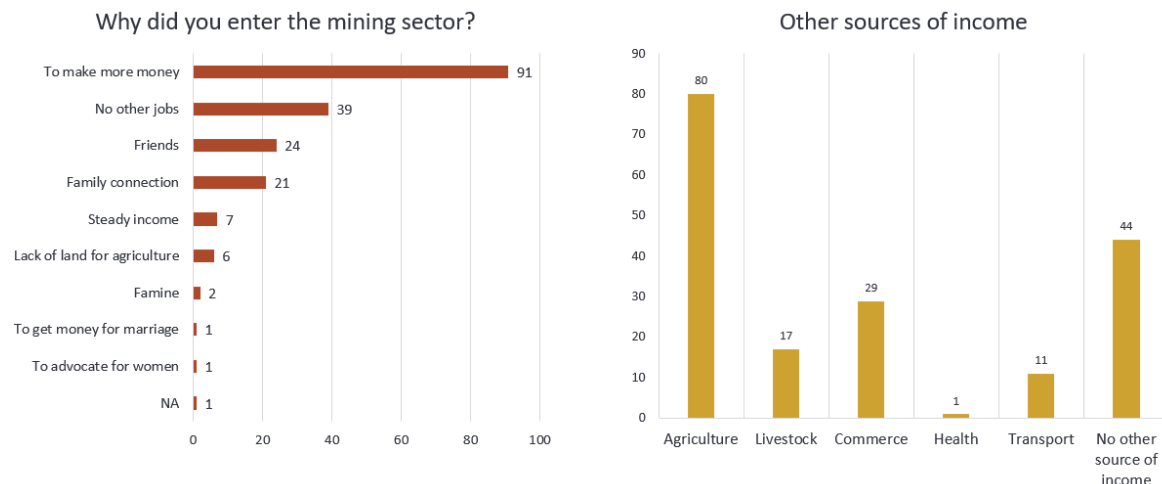


creuseur, at many of the sites. Despite this, the perception of many miners interviewed (especially in South Kivu) was that the disabled were unfit to work in sites. However, in disabled workers were especially prominent in the roles of *nettoyeurs* (washers), *trieurs* (sorters), *concasseurs* (crushers), and *managers* (small traders). There are even exceptions of disabled people working as *creuseurs*. One *creuseur* at Zola Zola told us: “They do the same job as the rest of us. There's a guy named Pichen who is a *creuseur* in our mine and he is doing his job without a problem even though he only has one arm.”⁴²

Other actors present at many sites include representatives of the cooperatives or companies which control the site as well as various government actors. The most common of these are the police of mines and agents for the Division of Mines and SAEMAPE. While they theoretically play roles such as ensuring security, traceability, and collecting formal taxes, they most often are sources of headaches for miners due to constant harassment, over taxation, and imposition of informal taxes and fines.

Most artisanal miners work in the mines year-round (82% of interviewees), while those who work seasonally tend to do so based on the growing seasons for agriculture.⁴³ However, even most full-time miners also have other sources of income; most commonly small-scale agriculture or commerce.

Figure 11. Artisanal miners largely come to mining to earn more and also do other roles on the side



⁴² Artisanal miner interview (Zola Zola-1)

⁴³ Growing season A: Plant in September/Harvest in January; Growing Season B: Plant in February/Harvest in May; Dry season: June-August

As seen in Figure 11 above, the most common reasons cited for entering the mining sector are: (1) because there are no other opportunities to make a living, or (2) to earn more than what they would make elsewhere (such as with agriculture). This is supported by evidence from a study in South Kivu showing that the average monthly income of those employed in both mining and agriculture was \$42, as opposed to \$17 for those engaged only in agriculture (Table 3 below).

Table 3. Income by sector in South Kivu per person⁴⁴

Sector of employment	Monthly income	+/- % compared to Artisanal mining
Agriculture	\$17	-29%
Artisanal mining	\$24	+ 0%
Agri-miner	\$42	+75%
Commerce - informal	\$20	-17%
Public administration	\$25	+4%

Négociants

Négociants are the link between artisanal miners working in the pits and the outside world, and as such understanding them is perhaps the most important key to understanding the mineral supply chain in the Kivus. *Négociants* are the large traders who move minerals from the villages near the mining sites to the *comptoirs* (export companies) and *unités de traitement* (processing plants) in Goma and Bukavu. They enjoy greater social status than those who work at the mines, and earn much more. There are three main types of *négociants*:

- 1) *Négociants* who work independently, moving between the cities and the selling points at various larger villages and towns where they purchase minerals from small traders such as *managers*. A sub-group of these independent *négociants* are those who actually work for armed groups, providing them with revenues from the mines even now that many have been driven from the mining sites they used to control by traceability efforts.
- 2) *Négociants* are those who hire independent *creuseurs* to work for them and sell the minerals which they find. In some of these cases, the *négociant* actually owns the pit where the *creuseurs* work and as such has a dual role as *cessionnaire*.
- 3) Representatives of semi-industrial companies (e.g. SMB and SAKIMA) who operate in the role of *négociant*. In sites such as SMB's concession near Rubaya, artisanal miners are mandated to sell directly to company which fills the *cessionnaire* and *négociant* roles.

⁴⁴ Sara Greenen. "Dispossession, displacement and resistance: artisanal miners at a gold concession in South Kivu, Democratic Republic of Congo," *Resources Policy* 40: 90-99. (2014).

S. Vwima, C. Rushigira, and G. Munguakonkwa. "Competition between industrial mining and agricultural exploitation in South Kivu: Case of the Luhwindja Chiefdom Community," *Livestock Research for Rural Development* 29, (10) 2017. <http://www.lrrd.org/lrrd29/10/svwi29189.html>

To legally act as a *négociant*, a *carte négociant* must be purchased for \$250 from the Division of Mines annually. Additionally, taxes must be paid to SAEMAPE, the Division of Mines, and the Ministry of Mines at various stages. Informal taxes and fees are also exacted along the way by local chiefs (customary tax), FARDC and armed groups (roadblock tolls), and informal fees by the police of mines. With all of these overhead costs, *négociants* generally purchase minerals at steep discounts from their going rate in the city. Because of this, many miners with whom we spoke complained that *négociants* are taking advantage of them because they have no way of testing the minerals for quality. While this is probably often the case, it is also true that the uncertainty with which *négociants* are faced in terms of what payments they may need to make on any given load (as well as the risk of complete confiscation of their minerals by armed groups or FARDC, which happens regularly) incentivizes *négociants* to charge a de facto risk premium which still often leaves them with little profit.⁴⁵

Despite some level of animosity on the part of *creuseurs* over pricing setting, the relationship with *négociants* is largely symbiotic with both dependent on the other. As such, *négociants* provide crucial services for *creuseurs* which otherwise would not exist for them. Foremost of these is the *négociants'* role as a source of credit. They often provide credit to *creuseurs* not only for purchase of tools and equipment but also for basic living expenses for them and their families. As such, *négociants* act as an informal source of microcredit in communities where no other source of financing typically exists. *Négociants* also are usually a primary conduit for non-mineral goods being brought to the more remote villages and mining sites from the cities. These include tools and machinery related to mining, but also consumer products and food items from the Goma and Bukavu.⁴⁶

Processing and treatment

Once *négociants* have brought the ore from the village to the city – by truck or car for 3Ts metals or on their person for gold – the first thing they do before turning around and selling it is to test the grade (quality) of their ore. We were told that while there are facilities to test mineral grade in Goma and Bukavu, many *négociants* prefer to bring a sample to Kigali where they can have it tested and receive a reliable grade at a laboratory that meets global standards (this has added benefits for the *négociants* when they can show these papers to the *comptoirs* or *unités de traitement* (while negotiating to sell the ore for export). The most prominent testing facility in Kigali to which *négociants* often bring their samples (usually 3-5 kg) is Alex Stewart International laboratory, where we were told that testing a 5 kg sample of tantalum costs \$300.

Depending on the mineral and to whom the *négociant* is selling, they may sell their ore to *unités de traitement* or a *comptoir*. *Unités de traitement* are the processing facilities to prepare the ore for export (more on treatment by mineral type below). The *comptoirs* are the officially sanctioned trading companies with approval for formal export of minerals. Often the *comptoirs* will include mineral

⁴⁵ Christoph Vogel and Josaphat Musamba. "Brokers of crisis: the everyday uncertainty of Eastern Congo's mineral *négociants*," *Cambridge University Press*, vol. 23, November 2017.

<https://www.cambridge.org/core/journals/journal-of-modern-african-studies/article/brokers-of-crisis-the-everyday-uncertainty-of-eastern-congos-mineral-négociants/406F065DB3749076507F85A4B556589D>

⁴⁶ Christoph Vogel and Josaphat Musamba. "Brokers of crisis: the everyday uncertainty of Eastern Congo's mineral *négociants*," *Cambridge University Press*, vol. 23, November 2017.

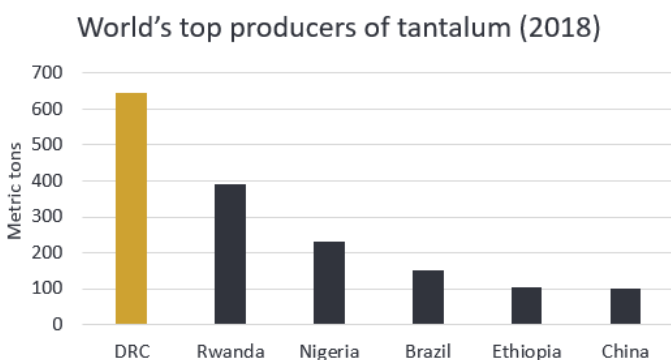
<https://www.cambridge.org/core/journals/journal-of-modern-african-studies/article/brokers-of-crisis-the-everyday-uncertainty-of-eastern-congos-mineral-négociants/406F065DB3749076507F85A4B556589D>

processing in house (for example METACHEM in Goma and Congo Jia Xin in Bukavu).⁴⁷ In contrast, it is reported that some *unités de traitement* at times also export informally. A compiled list of organizations and companies in the mineral supply chains examined in this assessment is available in Appendix 5.

Transportation and export

Despite the protracted decades of civil war and political instability, DRC has remained one of the most important suppliers of key minerals including gold, tantalum, tin, and tungsten for the global economy (DRC is the top producer of tantalum and possesses among the largest reserves globally of all four minerals). The extractive industry dominates the country’s economy, making up 98% of exports, 18% of government revenues, and representing 18% of the Gross Domestic Product (GDP) for the year 2018.⁴⁸ Similarly, the sector accounts for 11% of the national employment, although such a figure is considered to be very conservative, due to the lack of accurate data.

Figure 12. DRC produces 25% of tantalum globally



Yet, the country’s economy’s heavy reliance on minerals for revenues coupled with poor governance and widespread militias, has led to an important portion of the Congolese national production being illegally smuggled through neighboring countries, either as a means of funding armed groups or to escape increasingly heavy taxation put in place following the 2018 amendment of the mining code and arduous regulations.

Cassiterite and other minerals illegally arriving in Rwanda are relabeled as “produced in Rwanda” and exported as such. Illegal transport occurs by truck as well as by use of airplanes to Nairobi, Dar es Salaam, Kigali, and Kampala. Finding solid numbers on informal mineral exports is near impossible, though for gold, there have been estimates that up to 98% of total exports are informal, while tantalum export is the most formalized (thanks to the efforts of SMB, see below).⁴⁹ However, by looking at the total production numbers of DRC and its neighbors (though these are probably lower than actual production) and comparing them to official export numbers of each country, it is possible to derive an export/production ratio that highlights the prevalence of informal trade for gold and 3T minerals (see Figure 13 below).

⁴⁷ Metachem website: <https://metachemcongo.com/>

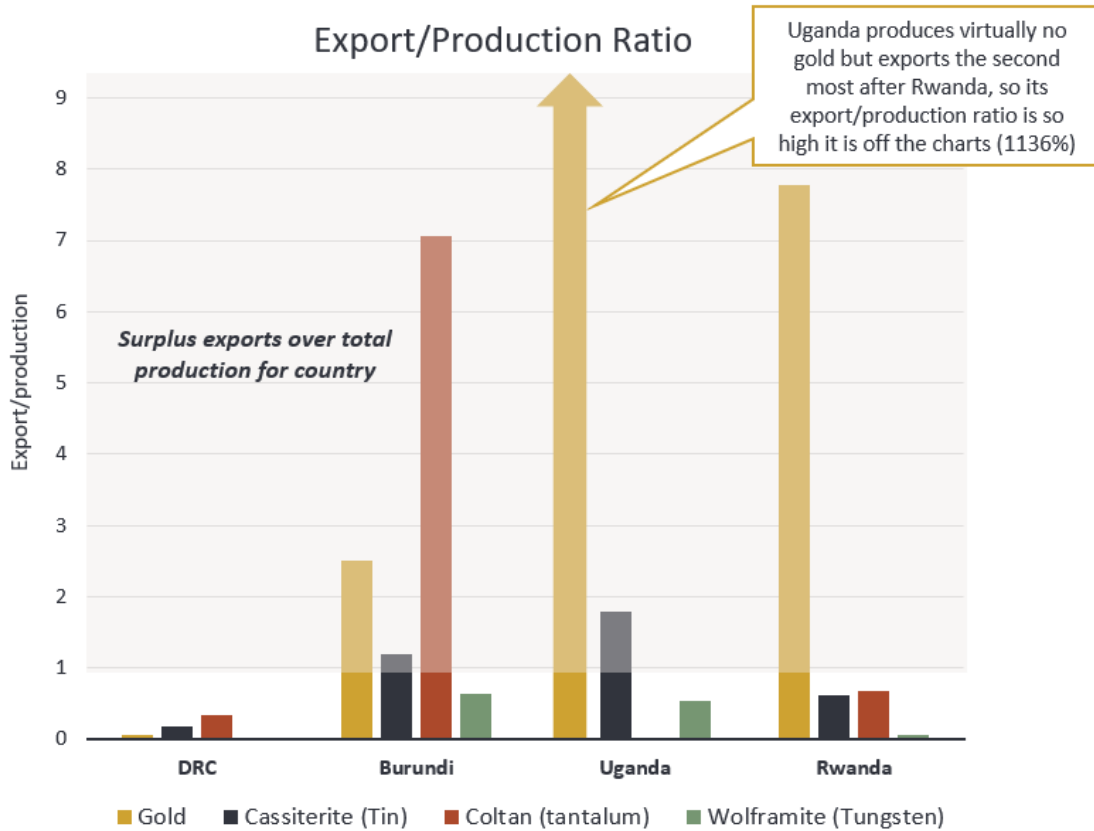
Noviva website (Congo Jia Xin is a subsidiary): <https://noviva.com/>

⁴⁸ EITI. “Democratic Republic of Congo,” Last updated March 11, 2020. https://eiti.org/es/implementing_country/5

⁴⁹ OFPRA. “L’exploitation et l’exportation des minerais dans l’Est de la RDC,” August 14, 2014.

https://www.ofpra.gouv.fr/sites/default/files/atoms/files/didr_note_rdc_exploitation_et_exportation_des_minerais_dans_les_tous_pays_ofpra_14.08.2014.pdf

Figure 13. Formal exports represent a miniscule proportion of total mineral production in DRC



Goods from the Kivus usually reach global markets by way of two land routes known as the Northern Corridor and the Central Corridor and through one of two ports, either Mombasa in Kenya or Dar es Salaam in Tanzania. Most of the goods transported as exports along these routes are minerals (98% of total exports in DRC) usually shipped by truck in 25-ton shipments. The first route, to Mombasa, is known as the Northern Corridor (shown in Figure 14 below). The Northern Corridor goes by road from Goma, through Kampala and Nairobi to Mombasa port in Kenya. The Central Corridor includes several parallel road routes from Goma or Bukavu, through Rwanda or Burundi to Dar es Salaam port in Tanzania (see Figure 15 below). The Northern Corridor route is significantly longer than the Central Corridor route (19-20 versus 9-10 days by truck), however Mombasa currently has larger port capacity (26.2 million tons) and is often preferred as an export route over Dar es Salaam (14 million tons) due to typically lower costs.

Figure 14. Northern Corridor to Mombasa⁵⁰



Figure 15. Central Corridor to Dar es Salaam⁵¹



⁵⁰ Adapted from the World Food Programme's Logistics Capacity Assessment (LCA) tools: <https://dlca.logcluster.org/plugins/viewsource/viewpagesrc.action?pageId=4227414>

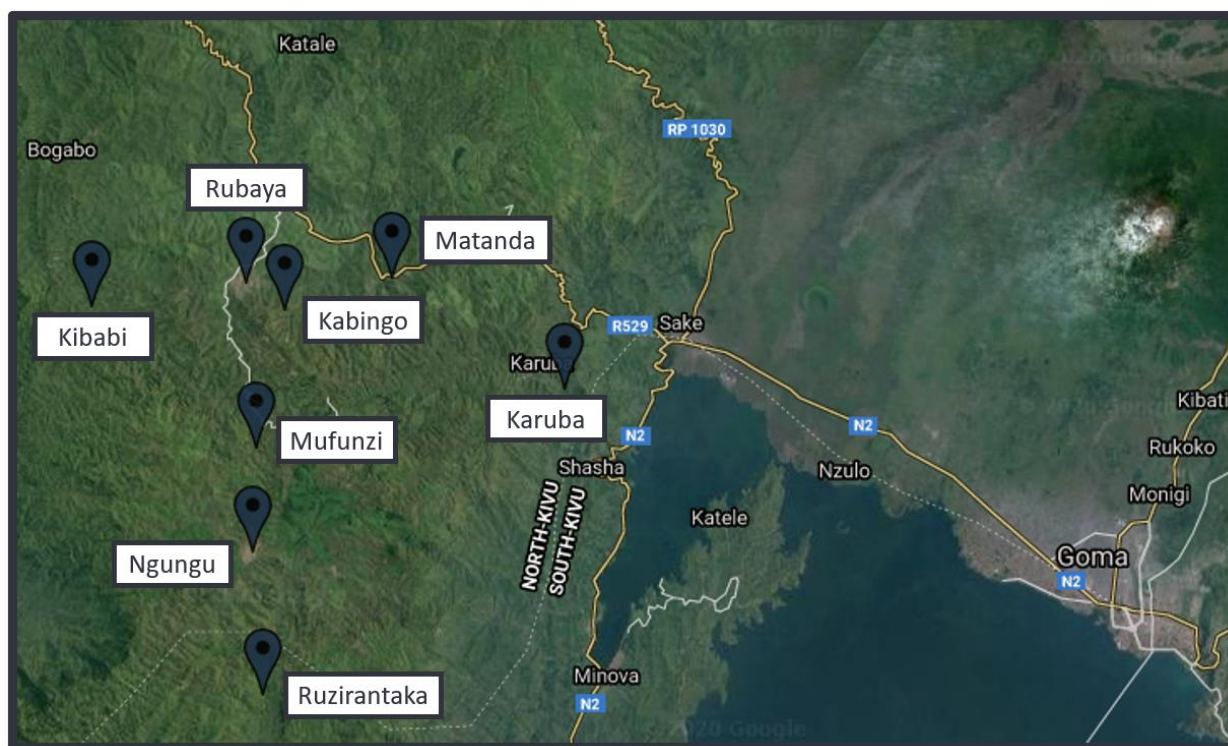
⁵¹ Adapted from the World Food Programme's Logistics Capacity Assessment (LCA) tools: <https://dlca.logcluster.org/plugins/viewsource/viewpagesrc.action?pageId=4227414>

Masisi

Communities and stakeholders

Masisi territory is home to 215 known artisanal mining sites with a vast variety of production levels and numbers of workers. At the 127 sites where IPIS has identified the number of workers, there are 27,000 artisanal miners with some sites with as few as 3-6 workers while others such as the biggest sites near Rubaya and Matanda having 5,000 each.⁵² Figure 16 shows the mining communities which we visited as part of this assessment. Mining sites around every community we visited included cassiterite as well as coltan, and these two minerals were the most prominently collected across the board. At Ngungu and Ruzirantaka, wolframite, tourmaline, and gold are also present and Matanda and Rubaya also had tourmaline and manganese.

Figure 16. Mining communities visited in Masisi territory and its environs



The key actors in these communities include those directly involved in the mining supply chain as well as local chiefs, government entities, churches, and civil society organizations. Other than at Rubaya and Karuba there were few enterprises identified outside of the mining sector.

While village chiefs were seen as primary community leaders at most sites, government authorities and FARDC were also present in every community and considered important actors. Village chiefs and administrative authorities were cited in every community as the key arbiters of disputes, with the one exception of Matanda where NGOs were cited as dispute arbiters (including War Child). Religious groups

⁵² IPIS. "Open Data," Accessed April 15, 2020 . <https://ipisresearch.be/home/conflict-mapping/maps/open-data/>

– also considered key actors, though less so than in South Kivu – present in these communities are primarily the Catholic Church, Adventists, and various protestant churches, though there are also mosques in Rubaya and Karuba and a Kibanguist church in Matanda. Annex 1 includes detailed community profiles, listing key actors and roles and characterizing the local economy.

For the mineral supply chain, the most important actors to highlight are companies and cooperatives active at these sites. Table 4 indicates the concession owners and primary mineral cooperative at each site visited. Cooperama (*Cooperative Minière Artisanaux de Masisi*) was the primary cooperative present at every site except Mufunzi, though there were other cooperatives at some sites (a complete list is included in Annex 5).

Table 4. Key mineral supply chain actors in Masisi territory

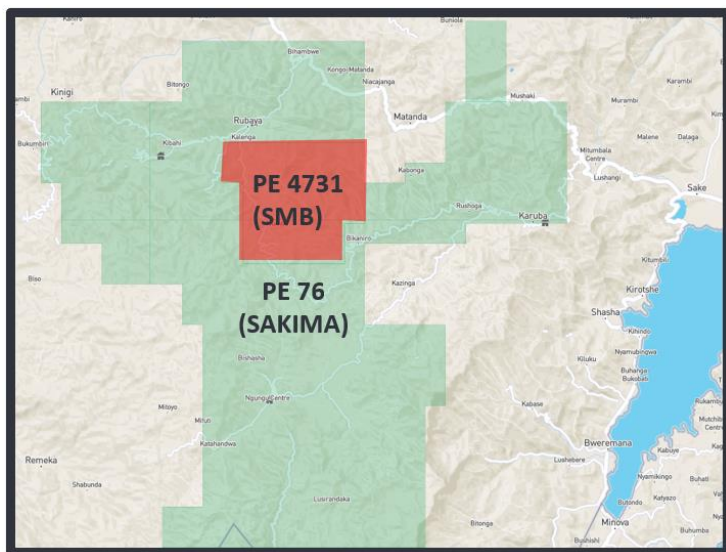
Community	Concession	Primary mining cooperative
Kabingo	PE 4731 (SMB); PE 76 (SAKIMA)	Cooperama
Karuba	PE 76 (SAKIMA)	Cooperama
Kibabi	PE 76 (SAKIMA)	Cooperama
Matanda	ZEA-425 (Artisanal mining zone)	Cooperama
Mufunzi	PE 76 (SAKIMA)	COMPICC (<i>Coopérative minière pour la promotion des communautés congolaise</i>)
Ngungu	PE 76 (SAKIMA)	Cooperama
Rubaya	PE 4731 (SMB); PE 76 (SAKIMA)	Cooperama
Ruzirantaka	PE 76 (SAKIMA)	Cooperama

There are three important actors to understand in the mineral supply chain in Masisi: the two semi-industrial companies SMB (*Société Minière de Bisunzu*) and SAKIMA (*Société Aurifère du Kivu et du Maniema*), and Cooperama. SAKIMA is a state-owned enterprise that operates as a semi-industrial mining operation, having inherited much of the former concession of the large former state-owned industrial mining enterprise, SOMINKI (*Société Minière et Industrielle du Kivu*), which was dissolved in 1997.⁵³ Not having the capacity for industrial mining, SAKIMA operates by allowing artisanal miners to

⁵³ SAKIMA. "Convention Minière entre La République Démocratique du Congo et la Sakima (Ex-Sominki) et Banro Resources Corporation," 2007. <http://congominer.org/reports/34-revisitation-de-la-convention-miniere-entre-la-rdc-sakima-ex-sominki-et-banro-resource-corporation>
 Institut d'études internationales de Montréal (IEIM). "Mining investment in areas of conflict: The case of the Democratic Republic of Congo (DRC)," Accessed April 22, 2020. <http://www.ieim.ugam.ca/IMG/pdf/appendix2.pdf>
 Ben Radley. "The End of the African Mining Enclave? Domestic Marginalization and Labour Fragmentation in the Democratic Republic of Congo," *Development and Change*, May 2019. <https://onlinelibrary.wiley.com/doi/full/10.1111/dech.12515>

work the sites on its concessions and charges a 10% ‘*frais rémunérateurs*’ on the value of the mineral products from its sites.⁵⁴

Figure 17. Map of the two PE concessions in Masisi territory⁵⁵



Cooperama and COMPICC (a small cooperative run by pastor Papa André Munyaruhome Mabumba out of Goma) are among the most prominent cooperatives working on SAKIMA’s concession in Masisi territory. In terms of land, most of the mining sites in Masisi territory are included in SAKIMA’s large PE 76 concession.⁵⁶

Among the various cooperatives operating in Masisi territory is particularly interesting as the most powerful and widespread cooperative as well as its tenuous relationship and

history of conflict with SMB. At the heart of this conflict and the center of both organizations power is Rubaya and its rich coltan deposits which make up a substantial portion of DRC’s coltan exports (and in turn of the global tantalum supply).⁵⁷ In addition to its mineral deposits, Rubaya’s location and prominence as the largest of the boomtowns has made it an important stop on the route to Goma from mining sites all over North Kivu and even the northern parts of South Kivu (such as Kalehe). The conflict is complex, involving tensions along ethnic lines impacted by a history of armed conflict as much as the legal disputes over the rights to mine in the PE 4731 concession.

Cooperama was originally founded in 1985 as a cooperative of artisanal miners operating in Masisi territory and now has over 3,000 registered artisanal miners as members (including 500+ women). We visited Cooperama’s headquarters in Goma and spoke with their Secretary General, Uwemeye Ntaho Jothan. However, the president of Cooperama is Robert Habinshuti Seninga who is also the president of

⁵⁴ IPIS. “Mapping artisanal mining areas and mineral supply chains in eastern DR Congo: Impact of armed interference and responsible sourcing,” April 2019. <https://ipisresearch.be/wp-content/uploads/2019/04/1904-IOM-mapping-eastern-DRC.pdf>

⁵⁵ Adapted from IPIS. “Carte de l’exploitation minière artisanale dans l’Est de la RD Congo,” 2019. <https://www.ipisresearch.be/mapping/webmapping/drcongo/v6/#-1.5463005839480246/28.924116786530135/12.082505733252423/4/1,2,4/2.12pfcw>

⁵⁶ IPIS. “Carte de l’exploitation minière artisanale dans l’Est de la RD Congo,” 2019. <https://www.ipisresearch.be/mapping/webmapping/drcongo/v6/#-1.5463005839480246/28.924116786530135/12.082505733252423/4/1,2,4/2.12pfcw>

⁵⁷ Estimates are that, as 2015 Rubaya produced 80% of DRC’s coltan exports, in other words approximately 20% of global coltan supply.

Local Africa News. “What It Takes to Make a Conflict-Free Smartphone,” September 2016. <https://www.thelocalafricanews.com/takes-make-conflict-free-smartphone/>

the provincial assembly of North Kivu and is the “big man” in Rubaya.⁵⁸ Robert Habinshuti Seninga has been a key Hutu leader throughout the recent history of the Kivus, and Cooperama generally has Hutu alignment. During the period of the RCD (*Rassemblement Congolais pour la Démocratie*) rebels, Seniga was closely aligned with the RCD governor of North Kivu Eugène Serufili, whose 20,000 strong militia was claimed to have forcibly recruited child soldiers in North Kivu (Serufili is now a minister in the DRC national government).⁵⁹ More recently Cooperama has been tied with local Mai Mai Nyatura groups and PARECO (*Patriotes Résistants Congolais*) a combined alliance of local Mai-Mai and Hutu militias in Masisi founded in 2007 to resist against the Tutsi-led CDNP (*Congrès national pour la défense du peuple*).⁶⁰ While both groups have since made peace with the Congolese government, factions of each still operate in Masisi Territory.⁶¹

SMB was founded in 1998 by Edouard Mwangachuchu, a Congolese Tutsi, and his business partner Robert Sussman, an American physician from Baltimore who was working in DRC at the time. Mwangachuchu has previously lived in the United States as a refugee for two years, where he worked in a Carvel ice cream factory.⁶² His brother, Ben Mwangachuchu (who has now taken over as CEO of SMB now that Edouard has since become a Senator in DRC) received his MBA from Notre Dame University and lived 11 years in Washington DC where he acted as CFO of two companies before returning to Goma to join SMB.⁶³ In 2007, Edouard Mwangachuchu and Sussman had a falling out and Sussman left the

⁵⁸ Karen Büscher. “Urbanisation and the Political Geographies of Violent Struggle for Power and Control: Mining Boomtowns in Eastern Congo,” *Revue internationale de politique de développement*, October 2018.

<https://journals.openedition.org/poldev/2769>

Libre Grands Lacs. “Nord-Kivu : HABINSHUTI SENINGA Robert , élu président de l’assemblée provinciale du Nord Kivu,” May 14, 2019. <http://libregrandlac.com/article/333/nord-kivu:-habinshuti-seninga-robert--elu-president-de-l-assemblee-provinciale-du-nord-kivu->

⁵⁹ Karen Büscher. “Urbanisation and the Political Geographies of Violent Struggle for Power and Control : Mining Boomtowns in Eastern Congo,” *Revue internationale de politique de développement*, October 2018.

<https://journals.openedition.org/poldev/2769>

Congo-NED. “Current situation: Exploitation, arms flows and trends,” December 19, 2003.

<http://www.congoned.dds.nl/geheim.html>

⁶⁰ Lara Atanasijevic. “Natural Resource Governance in Hybrid Political Orders: The Cases of North Kivu and Katanga,” Centre on Conflict Development and Peacebuilding, CCDP Working Paper, February 2016.

<https://www.extractiveshub.org/servefile/getFile/id/7020>

Christoph Vogel and Josaphat Musamba. “Brokers of crisis: the everyday uncertainty of Eastern Congo’s mineral négociants,” *Cambridge University Press*, vol. 23, November 2017.

<https://www.cambridge.org/core/journals/journal-of-modern-african-studies/article/brokers-of-crisis-the-everyday-uncertainty-of-eastern-congos-mineral-negociants/406F065DB3749076507F85A4B556589D>

TRAC. “Coalition of Congolese Patriotic Resistance (PARECO),” Accessed April 15, 2020.

<https://www.trackingterrorism.org/group/coalition-congolese-patriotic-resistance-pareco>

⁶¹ Radio Okapi. “Nord-Kivu: les milices APCLS et Nyatura signent un accord de paix,” August 26, 2016.

<https://www.radiookapi.net/2016/08/26/actualite/securite/nord-kivu-les-milices-apcls-et-nyatura-signent-un-accord-de-paix>

Kivu Security Tracker. Accessed April 22, 2020. <https://kivusecurity.org/map#>

⁶² Formerly Mwangachuchu Hizi International (MHI) before transitioning to a new legal entity in compliance with DRC’s entrance into OHADA (*Organisation pour l’Harmonisation en Afrique du Droit des Affaires*) legal system New York Times. “The Dirt in the New Machine,” August 12, 2001.

<https://www.nytimes.com/2001/08/12/magazine/the-dirt-in-the-new-machine.html>

⁶³ SMB. “Meet our Team,” Accessed April 22, 2020. <https://www.smb-sarl.com/fr/meet-our-team/>

LinkedIn. “Ben M.,” Accessed April 22, 2020. <https://www.linkedin.com/in/ben-m-30856418/>

company, suing SMB and eventually being awarded \$2 million by a Maryland court. Around this same time Mwangachuchu and SMB became closely aligned with the CNDP, financing their militia operations and even becoming the short-lived president of CNDP's political party for a time before they were largely disbanded in 2009.⁶⁴

The conflict between SMB and Cooperama is centered around the land included in PE 4731, a small (25 sq. km) but extremely lucrative concession for which SMB was granted an exploration license in 1999 and an exploitation license in 2006 (valid from 08-11-2006 to 07/11-2022).⁶⁵ Following the CNDP years, the concession was validated as "green" by the Ministry of Mines in 2012 and supports most of SMB's 700-800 employees. While SMB has been granted the legal rights to land, Cooperama sees it as a land grab of rich mineral deposits where its artisanal miners have been operating for decades. After years of conflict between the two organizations, they signed an agreement in November 2013 which relegated SMB's workers to the large Bibatama site near Rubaya, while allowing Cooperama's artisanal miners to operate on the rest of the concession under the condition that they can only sell to SMB.⁶⁶ Despite this agreement, there have continued to be flare ups in violence over the years between the two organizations. Most recently, conflict has sprung up over delayed payments from SMB to Cooperama due to a large shipment of coltan which was stopped during export over traceability issues. Cooperama is forced to sell their production from PE 4731 yet SMB has been unable or unwilling to pay due to this situation leading to a number of clashes – including while we were in the field – which have left a number of Cooperama miners dead.⁶⁷

Coltan supply chain

Bibatama site near Rubaya, is operated directly by SMB employees, is mined on a semi-industrial basis using machines which increases safety but has lower production than artisanal mining. SMB employees extract the coltan using machinery to excavate and then sending miners down to reach the places where the machines cannot reach. Basic processing – washing, sorting, crushing – is done one site much as in an artisanal mine and then bagged and tagged using a traceability system and transported to Goma for export on SMB trucks. Since 2013, SMB's mines have generally been considered to be conflict free.⁶⁸

Artisanal miners, including Cooperama miners working on SMB and SAKIMA concessions, mine and process (sort, wash, crush) coltan ore on site before selling the ore to *négociants* who typically transport

⁶⁴ Tom Burgis. *The Looting Machine: Warlords, Oligarchs, Corporations, Smugglers, and the Theft of Africa's Wealth*. New York: Public Affairs, 2015.

<https://books.google.com/books?id=F9J1CwAAQBAJ&printsec=frontcover#v=onepage&q&f=false>

⁶⁵ Nellia Mutemeri. "Certification Audit of Bibatama Mine, DRC," 2017.

https://www.bgr.bund.de/EN/Themen/Min_rohstoffe/CTC/Downloads/re_certifikation_audits_bibatama_en.pdf?__blob=publicationFile&v=3

⁶⁶ Lara Atanasijevic. "Natural Resource Governance in Hybrid Political Orders: The Cases of North Kivu and Katanga," Centre on Conflict Development and Peacebuilding, CCDP Working Paper, February 2016.

<https://www.extractiveshub.org/servefile/getFile/id/7020>

⁶⁷ This conflict was given as SMB's excuse for banning our team from visiting PE 4731, though we visited other sites around Rubaya that were on the SAKIMA concession and also operated by Cooperama miners.

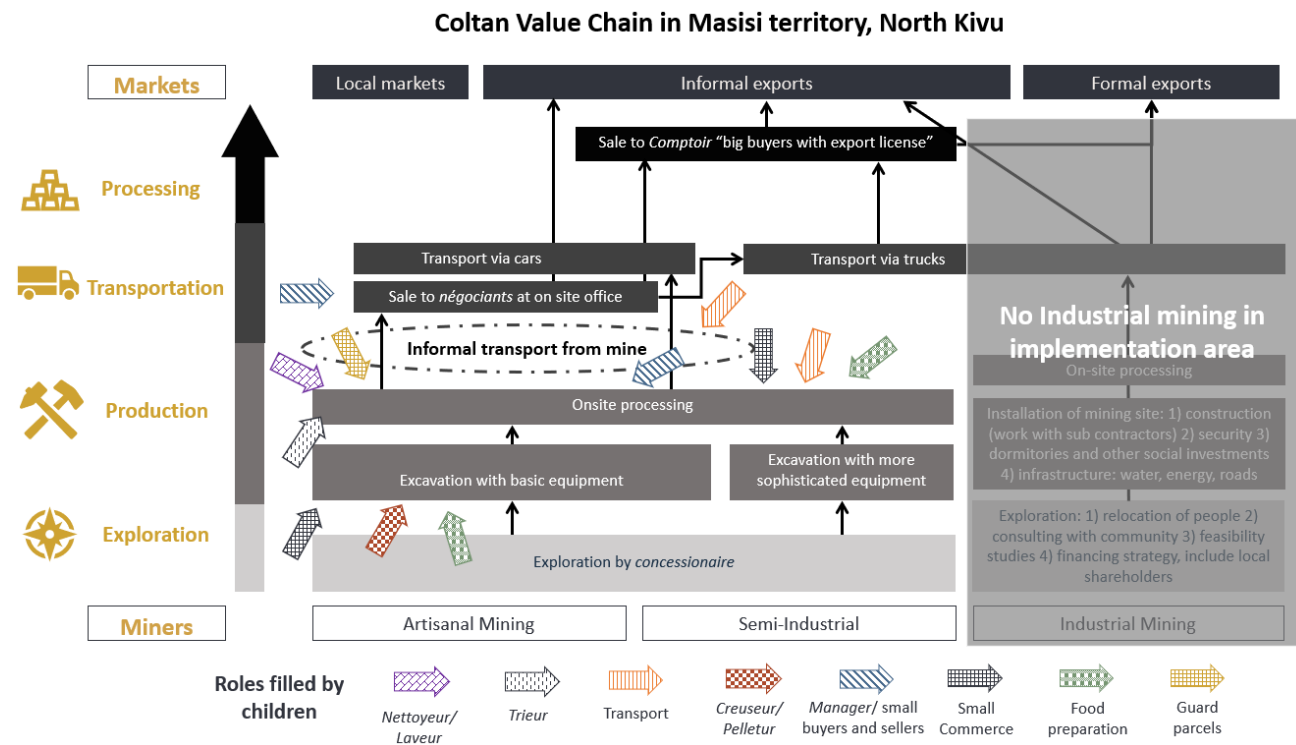
⁶⁸ While there are varying definitions of what "conflict free" means, the SEC, under the Dodd-Frank Act, defines it as products which, "do not contain minerals that directly or indirectly finance or benefit armed groups."

Jones Day. "SEC Issues Final Rules Under Dodd-Frank Act Regarding Conflict Minerals," October 2012.

<https://www.jonesday.com/en/insights/2012/10/sec-issues-final-rules-under-dodd-frank-act-regarding-conflict-minerals>

it to Goma for export. As an example, the contents of coltan at Rubaya site include tantalum, iron, manganese, magnesium, and niobium. Magnets are used during the sorting process to pull out the iron from the rest to gain a higher % of tantalum in the remaining ore (other minerals are left in the coltan and only separated during the smelting process outside of DRC, usually in China and their value is not generally passed on to those in the supply chain in DRC). Before being sold to *négociants*, coltan is transported by foot in large bags carried by *managers* on their heads from the mining sites to the local selling point (usually in the nearest mining community) where the *négociant* has an office. For Cooperama miners working on the SMB concession minerals are sold to SMB staff who play the *négociant* role and transport the ore on their trucks to Goma. For those outside the concession they may sell their minerals to SAKIMA, to Cooperama *négociants*, or independent *négociants* who will transport the ore to Goma or in some case directly smuggle it across the border. Ore derived from locations other than SMB concession is generally sold by *négociants* to *comptoirs* in Goma who will load the coltan in large drums and exported by truck (generally in 25 ton loads) through Rwanda or Uganda to the ports of Mombasa or Dar es Salaam where it will be shipped to Asia for smelting into processed tantalum, and eventually used to produce products such as circuit boards and consumer electronics (e.g. phones, laptops, cameras).⁶⁹ Often *négociants* will bypass the *comptoirs* and smuggle the coltan across the border to Rwanda to get a better price. In these cases, it is incorporated into Rwandan production and exported formally from Rwanda.

Figure 18. Children working in the coltan supply chain in Masisi territory



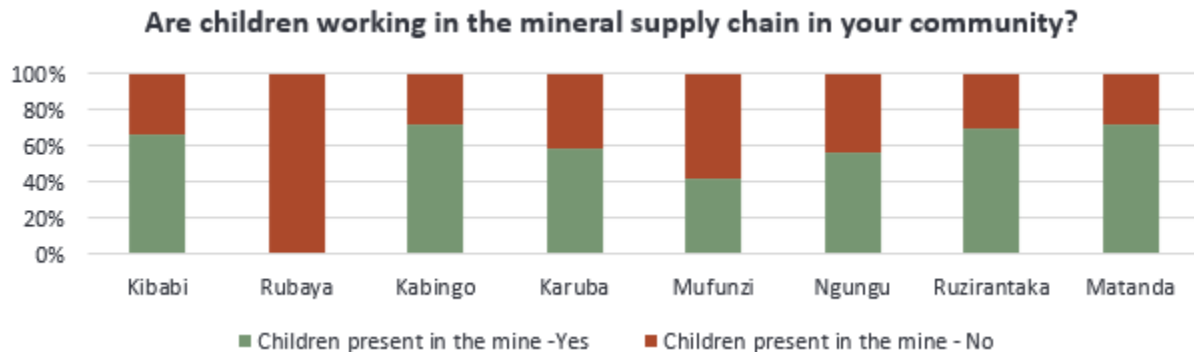
⁶⁹ British Geological Survey. "Niobium-Tantalum," April 2011. <https://www.bgs.ac.uk/mineralsuk/search/home.html>

Findings on child labor in Masisi

In the communities visited in Masisi territory, many children went to school, while some worked full time. However, of those who went to school, many worked after school, either at home or in various jobs related to mining, transport, agriculture, livestock, and commerce. Typically, children who do not work outside of the home are involved in household work such as fetching water, watching livestock, helping around the house or in the fields, or watching the small children.

Children (10-17) work in many roles in and around the coltan supply chain. Figure 18 above shows the roles where children are most commonly found in the coltan supply chain, based on the research team’s observations, interviews with artisanal miners, and focus groups with children. While the role of *creuseur* is largely restricted to children over 15 years old, it is common to find children under the age of 15 – as young as 9-10 years old – in many other roles around the mining sites. The most common of these by far are in washing and sorting minerals from debris. Other roles played by children in the supply chain are as transporters around the site, providers of security for parcels of minerals waiting for transport, and even as small buyers and sellers around the site and between the site and the *négociants* in the villages. Children work also in other roles around the mines that are not directly associated with supply chains, including small-scale commerce (e.g. airtime cards, batteries for flashlights) and selling and preparing food for the miners. From our observations and focus group discussions, it is clear that both boys and girls are both frequently present at mining sites, though quantification was not possible since children were most often cleared out of the mining sites by the time the Just Results team arrived.

Figure 19. Children are reported working in all sites except those around Rubaya



Artisanal miners interviewed reported that children were involved in the mineral supply chain in some way at every community we visited, other than Rubaya. Whether this is indicative of a true lack of child labor at Rubaya sites or whether this is reflective of a greater unwillingness to speak about it due to tighter supervision from the cooperatives and SMB, police of mines, and other government officials is unclear.

What is clear, is that in most if not all communities, child labor somehow permeates the mineral supply chain even when the authorities and local head of mines are trying to prevent it. In many cases, artisanal miners work independently and are not necessarily accountable to a “Boss” or cooperative, reducing the potential avenues for oversight into their potential engagement of children in their work. Many of these miners may even work with children out of pity for them, to try and help them make a living. “These children come to us to ask for jobs and since the state does not allow it, we also chase them away,” a

creuseur from Ngungu said, “But when there is strong activity you can secretly give them a small job to wash your minerals.”⁷⁰

Another compounding factor is persistence of children trying to earn money in the mines, whether to support themselves and their family or just to earn some spending money for themselves. Many of the children in the mines, we were told, are orphans or were abandoned by their parents (it is hard to quantify, but seems to be widespread due to decades of conflict). In cases where children are banned from the mines they often come to the pits after dark (potentially even more dangerous than during the day) to dig through the debris to find ore to wash and sell. This depends wholly on location and the willingness of the various actors involved to look the other way. For instance, one *creuseur* in Matanda, when asked about children under 15 years old working in the mines responded, “They are not allowed to work in the mine but we do it secretly. If a mining agent catches you, you give him something and the child can leave.”⁷¹

In Masisi territory we heard several times that the parents of children caught working in the mines by the mining police would suffer fines. However, based on what we heard in interviews with artisanal miners and in our focus group with women in many of these communities, it seems clear that parents often have little control over the decisions of their children and it is unclear how much positive effect such fines might have if any.

Child worker profile: Matanda*

14-year-old Jean is one of the many *creuseurs* working in the pits around Matanda to find coltan and cassiterite. He has no relatives other than his grandmother with whom he lives and supports.

He told us, “I work all year round, but sometimes I don't go to the mines but instead farm for the individuals who pay me as a day worker. I have done this since I was 12 years old and today I am 14 years old.” Occasionally Jean also will char wood to make charcoal to sell which can earn him up to 1000 FC (\$0.58) in a day. He started working at age 12, after he asked for a job and the manager of the mining decided to let him work after a two-month trial period.

While working in the mines has allowed Jean to support his grandmother, he feels his wages are not very good and worries about safety. “Working conditions are not good and accidents are very frequent,” he told us. “*Creuseurs* sometimes die because a tunnel collapses or because of the lack of air.”

*Artisanal Miner interview (Matanda-5), Jean is a pseudonym given to protect the identity of the child

Outside of the coltan supply chain, children also work in many other roles in the communities which we visited. Common roles for children in other sectors in Masisi territory include the following (these roles are the same for boys and girls, though girls are somewhat more likely to work in the home):

- **Agriculture:** clearing fields, planting, working in the fields, simple processing (e.g. making cassava flour), selling produce

⁷⁰ Artisanal Miner interview (Ngungu-4)

“mining agents” refers to agents of the Division of Mines

⁷¹ Artisanal Miner interview (Matanda-6)

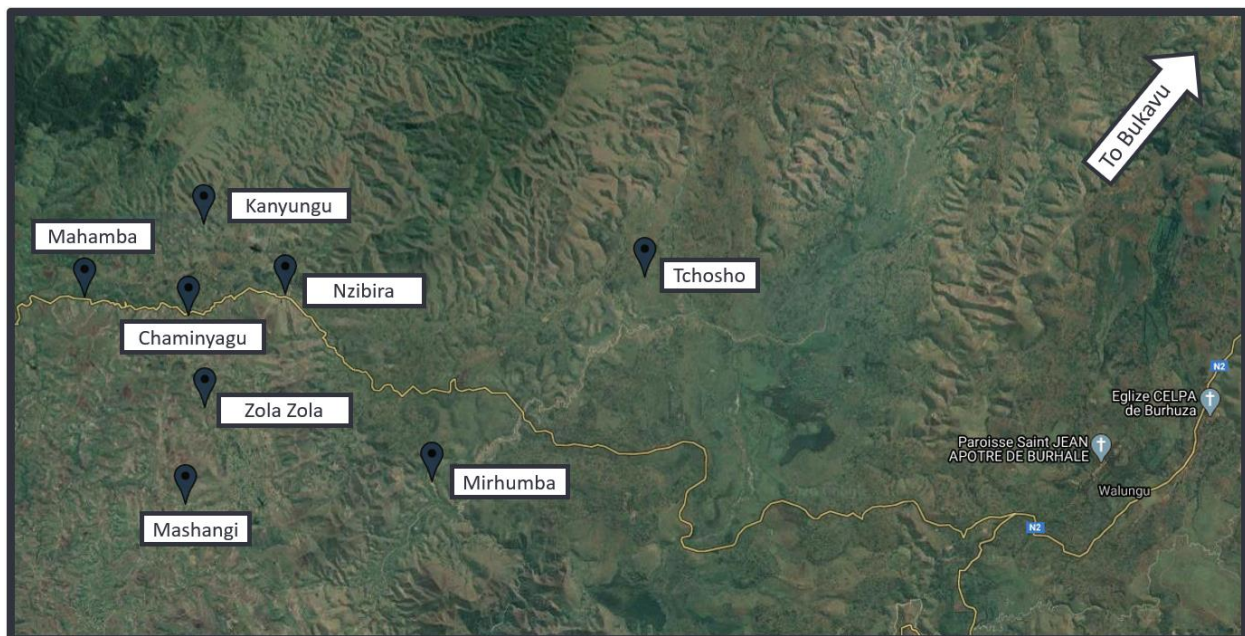
- **Commerce:** Small commerce (such as selling fruit, pastries, batteries, airtel cards), working in bars and restaurants
- **Livestock:** Watching and feeding livestock, milking cows and goats, producing cheese
- **Transport:** Carrying parcels by foot between villages and mining sites, villages and the market, and from the market to the villages, from fields to markets, and transporting dairy and agricultural products from the farm to the markets.

Nzibira

Communities and stakeholders

Walungu territory is home to 152 known artisanal mining sites with a vast variety of different production levels and numbers of workers. At the 129 sites where IPIS has identified the number of workers IPIS there are 22,000 artisanal miners. Of these sites, 38 are in the areas around Nzibira hosting just over 3,000 artisanal miners, with some sites with as few as 2-10 workers while the biggest sites, such as those around Zola Zola, Chaminyagu, and Tchoso have 200-300 each.⁷² As a whole, mining communities surrounding Nzibira can be characterized as much smaller, more rural (often up in the mountains), and less well equipped than those in Masisi territory. Mining sites around Nzibira primarily produce gold, cassiterite, and to a lesser extent wolframite. Every site we visited had cassiterite except for Mirhumba which was gold only.

Figure 20. Mining communities visited in Nzibira and its environs



The key actors present in these communities include both actors directly involved in the mining supply chain, local chiefs, FARDC, government entities, churches, and civil society organizations. In Mahamba, a

⁷² IPIS. "Open Data," Accessed April 15, 2020 . <https://ipisresearch.be/home/conflict-mapping/maps/open-data/>

faction of the Raia Mutomboki (Outraged Citizens) – a group of local Mai Mai militias deriving from customary tribal areas – led by commander Ndarumanga is heavily involved in mining activities. This was the only site we visited with any kind of direct rebel involvement, however Ndarumanga is infamous as one of several militia leaders who regularly stop convoys from Nzibira on their way to Bukavu, taking tolls of up to 20% of the total value of the minerals.⁷³

Village chiefs are seen as primary community leaders at all the communities other than Nzibira where the *chef de centre* and FARDC commander were considered the primary leaders. Nzibira, being the only large town, was the only community where government agents were a fixed presence, though mining police and other relevant government officials made the rounds to most of the other sites. Village chiefs and pastors were cited in most community as the key arbiters of disputes, except in Nzibira where it is the administrative authorities and FARDC. Religious groups – also key actors – present in these communities are primarily the Catholic Church, Jehovah’s Witnesses and various protestant churches. Few enterprises outside of the mining sector exist in these communities, other than in Nzibira, where there are hotels, restaurants, money changers, and various shops selling goods (e.g. clothing) and services (e.g. tailors, carpenters). Annex 1 includes detailed community profiles which detail the key actors and roles as well as the local economy in each community.

For the mineral supply chain, the most important actors to highlight are the cooperatives which are most active at these sites as well as the Canadian industrial mining company Banro (which does not operate in the area but owns some of the concessions through its subsidiary Twangiza Mining). Table 5 indicates the concession owners and primary mineral cooperatives at each site visited.

COMIDEA (*Coopérative minière des exploitants artisanaux*) and COMIANGWE (*Coopérative Minière et Agricole de Ngweshe*) are the two cooperatives amin cooperatives present at every site we visited, though other cooperatives are present in the areas around Nzibira (a complete list of cooperatives active around Nzibira is included in Annex 5).

Table 5. Key mineral supply chain actors in Masisi territory

Community	Concession	Primary mining cooperative present
Chaminyagu	No concession present	COMIDEA
Kanyungu	ZEA 812 (artisanal zone)	COMIDEA
Mahamba	No concession present	COMIANGWE
Mirhumba	PE 44 (Twangiza Mining)	COMIDEA
Mushangi	PE 44 (Twangiza Mining)	COMIDEA

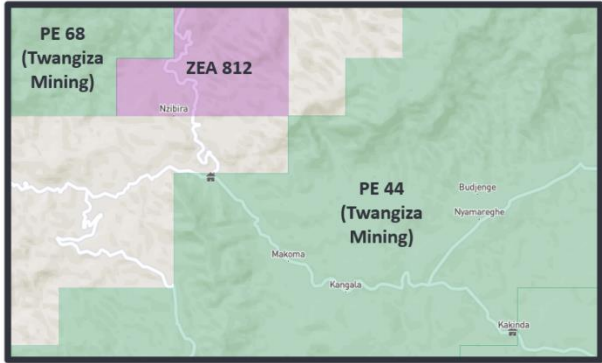
⁷³ Kivu Security Tracker. Accessed April 22, 2020. <https://kivusecurity.org/map#>
 Christoph Vogel and Josaphat Musamba. “Brokers of crisis: the everyday uncertainty of Eastern Congo's mineral *négociants*,” *Cambridge University Press*, vol. 23, November 2017.
<https://www.cambridge.org/core/journals/journal-of-modern-african-studies/article/brokers-of-crisis-the-everyday-uncertainty-of-eastern-congos-mineral-negociants/406F065DB3749076507F85A4B556589D>

Tchoso	PE 44 (Twangiza Mining)	COMIANGWE
Zola Zola	PE 44 (Twangiza Mining)	COMIDEA

The relevance of the mineral concessions seems much less in the areas around Nzibira than in Masisi, in part because the mineral supply chain in the whole territory is far less developed and much more rural while the terrain is rough and many of the sites are high up on mountains. For instance, two of the communities we visited (Chaminyagu and Mahamba) are not even on mining concessions, while all of the others except for Kanyungu are the concession of Twangiza Mining, a subsidiary of the Canadian industrial gold mining company Banro. While Banro owns concessions over large swaths of South Kivu and neighboring Maniema province – even after a tumultuous 23 year tenure in Eastern Congo – they only operate two large industrial mines: Twangiza in South Kivu Namoya in Maniema, which together produced approximately 200,000 ounces of gold annually.⁷⁴ Artisanal miners continue to operate over the rest of Banro/Twangiza Mining concessions without any visible effort by Banro or government officials to stop them or delegitimize them.

The head of COMIANGWE cooperative is one of the most powerful people in Walunugu territory, and perhaps one of the most powerful women in South Kivu. In addition to being president of the cooperative, she is the wife of the customary king of Ngweshe who founded COMIANGWE in 2014 with help of friends in government – a move rival cooperatives including COMIDEA consider a land grab of territories they had been operating in for years. COMIANGWE has around 300 members and is headquartered in Nyamurale, in Walungu territory.⁷⁵

Figure 21. Map of the concessions around Nzibira⁷⁶



COMIDEA was founded in 2010 and is led by a veteran local négociant who also leads the association of négociants in Nzibira. COMIDEA has about 400 members and is headquartered in Nzibira. The head office is located in Nzibira, a

⁷⁴ Bloomberg. “After Two Tumultuous Decades, Congo Gold Miner Is Back From the Brink,” July 3, 2019. <https://www.bloomberg.com/news/articles/2019-07-03/back-from-the-brink-banro-splits-to-revive-congo-gold-fortunes>

⁷⁵ Jordan de Haan and Sara Greenen. “Mining cooperatives in Eastern DRC: saviour or exploiter? The interplay between historical power relations and formal institutions,” *The Extractive Industries and Society*, June 2016. https://www.researchgate.net/publication/303779719_Mining_cooperatives_in_Eastern_DRC_The_interplay_between_historical_power_relations_and_formal_institutions

⁷⁶ Adapted from IPIS. “Carte de l’exploitation minière artisanale dans l’Est de la RD Congo,” 2019. <https://www.ipisresearch.be/mapping/webmapping/drcongo/v6/#-1.5463005839480246/28.924116786530135/12.082505733252423/4/1,2,4/2.12pfcw>

small mining town in Walungu.⁷⁷ Tensions between COMIDEA and COMIANGWE are high due to disputes over COMIANGWE's creation and COMIDEA's claim that they should only operate in artisanal zones which don't yet exist in the area aside from the small ZEA 812 concession where Kanyungu is located. Meanwhile COMIANGWE accuses COMIDEA of extorting the miners and forcing *négociants* and miners to join them.⁷⁸ Despite these turf wars between the two cooperatives, the miners themselves at the sites visited, seemed fairly disengaged and unconvinced that the cooperatives did much at all for them. One *creuseur* from Mahamba told us, " *Negociant* come here to buy, there is also the *mwami* cooperative but it doesn't matter to us."⁷⁹ (*Mwami* is the word for "customary king" and refers to the king of Ngweshe who founded COMIANGWE.) At Mushangi, the activities of the cooperatives are even less felt, with one female *nettoyeur* saying, " We are told about cooperatives but they are absent on this site. I do not know what they are for, I do not see any role that they play. We are alone in this site, we do not have any organization or associations involved in the mine."⁸⁰ *Creuseurs* at Mushangi were slightly more aware of cooperatives but equally dismissive of their role with one telling us "Cooperatives do nothing," and another saying "We have a cooperative present at the site but it does not play any role, it does not help in any way."⁸¹ A similar story was told at most of the sites, with cooperatives playing a minimal role other than as *négociants* or occasionally to come and tag minerals, though a *cessionnaire* from Zola Zola complained to us that COMIDEA often didn't even have money to buy the minerals.⁸² Tchocsho was one place where we were told of more extensive activities, with one *creuseur* telling us, "I am a member of the COMIANGWE cooperative, which has the role of raising awareness of how we are supposed to behave and work (no pregnant women in the sites, no children under 18 in the site , prohibition of highly alcoholic drinks to reduce violence in the site)."⁸³ What is clear, is that from a site-to-site basis cooperatives have varying levels of activity which may be determined by the size of the site, accessibility of the site, or businesses interests of those controlling the cooperatives.

Gold supply chain

While the mineral supply chain operates mostly the same across different minerals (many times several minerals are found in the same pits), gold differs in some ways from the 3Ts, largely in how it is transported and the fact that it is treated in DRC, whereas 3Ts ore is shipped in raw form usually to Asia for smelting.

Artisanal miners dig for gold and sort and wash the ore on site before selling it to *managers* or *négociants* who typically transport it to Bukavu for processing. There are no semi-industrial mines in the

⁷⁷ Jordan de Haan and Sara Greenen. "Mining cooperatives in Eastern DRC: saviour or exploiter? The interplay between historical power relations and formal institutions," *The Extractive Industries and Society*, June 2016. https://www.researchgate.net/publication/303779719_Mining_cooperatives_in_Eastern_DRC_The_interplay_between_historical_power_relations_and_formal_institutions

⁷⁸ Christoph Vogel, Ben Radley, and Josaphat Musamba. "A Miner's Canary in Eastern Congo: Formalisation of Artisanal 3T Mining and Precarious Livelihoods in South Kivu," *The Extractive Industries and Society* vol. 5, September 2017. https://www.researchgate.net/publication/319992248_A_Miner's_Canary_in_Eastern_Congo_Formalisation_of_Artisanal_3T_Mining_and_Precarious_Livelihoods_in_South_Kivu

⁷⁹ Artisanal Miner interview (Mahamba-6)

⁸⁰ Artisanal Miner interview (Mushangi-1)

⁸¹ Artisanal Miner interview (Mushangi-2), Artisanal Miner interview (Mushangi-3)

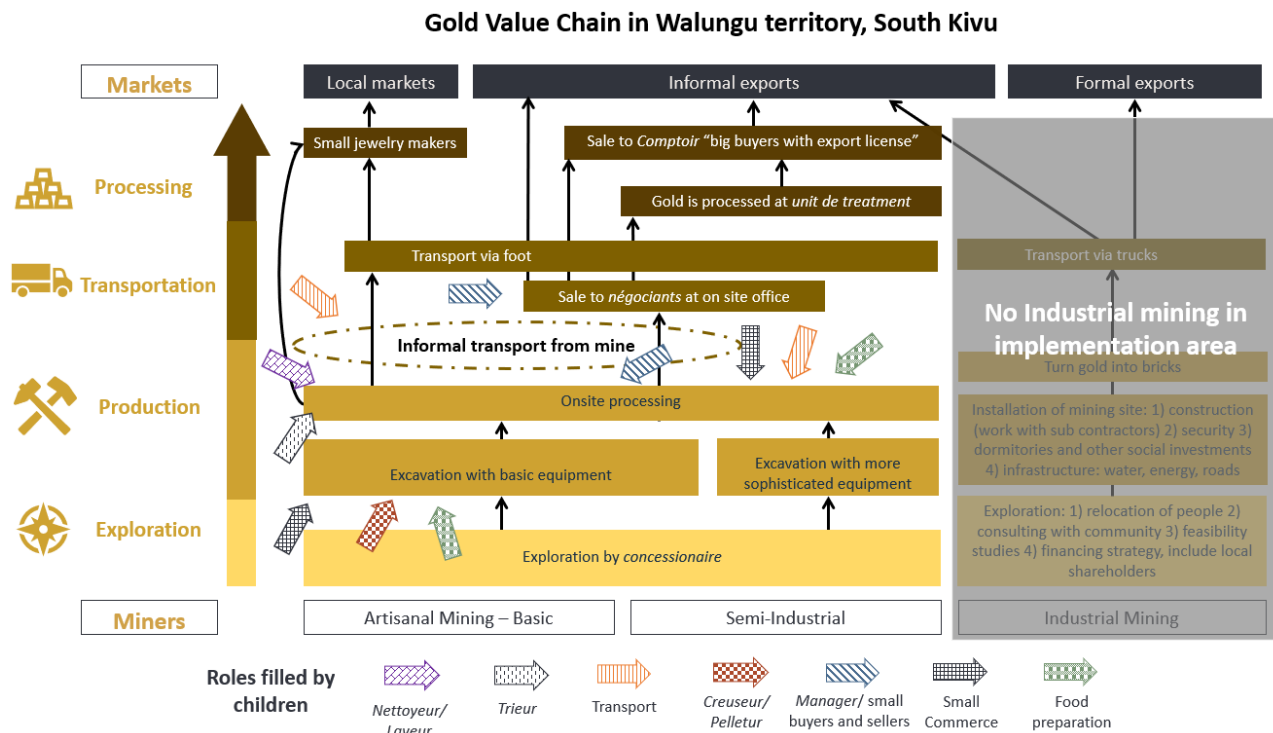
⁸² Artisanal Miner interview (Zola Zola-2)

⁸³ Artisanal Miner interview (Tchoshosho-5)

area around Nzibira (for gold or anything else). Unlike 3Ts ore, which are transported in large sacks, gold is generally transported in very small quantities by motorbike or by foot.

Miners who dig for gold often prefer to work alone to avoid having to pay a high cut to the *cessionnaire*. Even those who work for *cessionnaires*, will often hide some of the gold they find to sell it themselves, sometimes even swallowing it. They will then sell it to informal buyers who come to the mining sites at night to buy gold directly from them. Because individuals are banned from exporting more than 10kg of gold, there is an even stronger incentive to smuggle than with other minerals. This is one reason why the vast majority of artisanally produced gold from South Kivu is smuggled through Rwanda or Burundi.

Figure 22. Children working in the gold supply chain in South Kivu communities



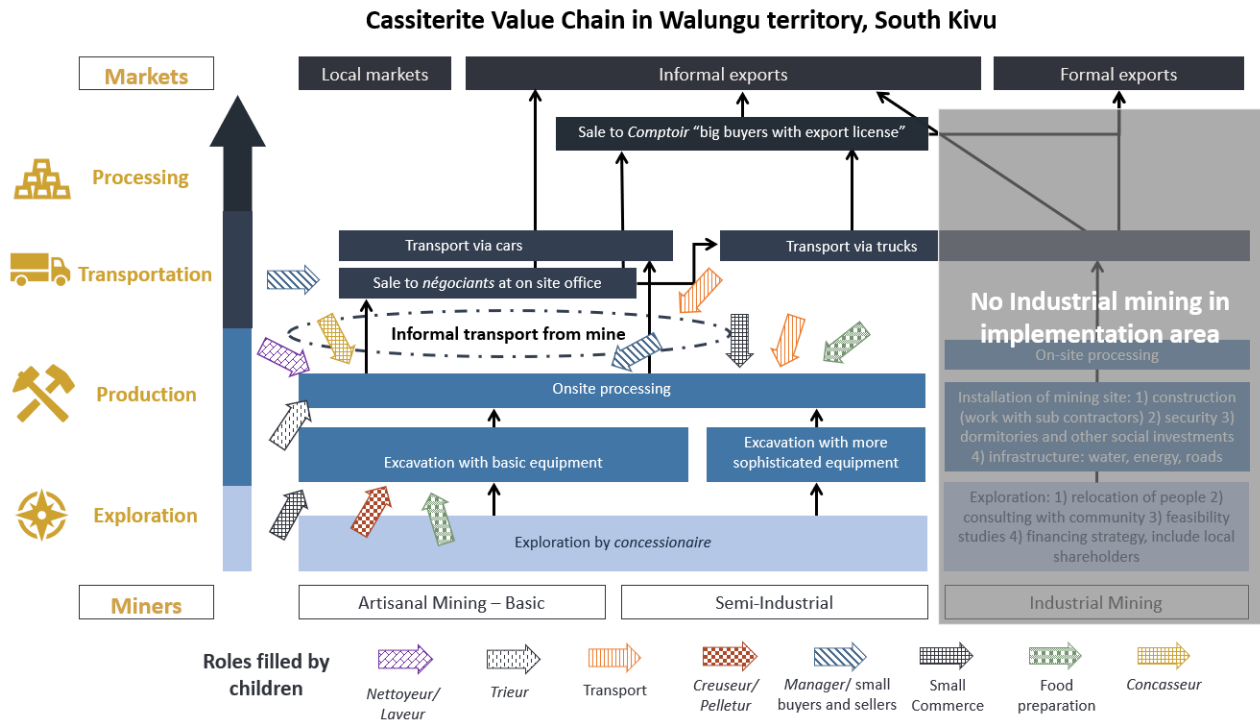
Once ore is brought to Bukavu by the *négociants*, it is sold to *units de traitement* which will continue to process the gold ore. Fire and nitric acid are used to remove and leave grains of pure gold. This gold can be sold to jewelers in Bukavu who use it create rings and others items of jewelry for local markets (a common store of value and important part of traditional culture). This gold dust is also often smuggled across the border for sale in Rwanda. For gold which is to be formally exported (and sometimes also informally) the gold continues to be through a smelting processed and is then cast into gold bars ready for export (which can be worth well over \$150,000 each).⁸⁴ In the case of export, *unités de traitement*, where they are separate, will sell to *comptoirs* who will in turn export the gold through Rwanda to Mombasa or Dar es Salaam.

⁸⁴ Wildlife Messengers. "From Extraction to Final Product: Following the Gold Production network in Eastern DR Congo," December 27, 2017. <https://wildlifemessengers.org/gold-mining-congo/>

Cassiterite and Wolframite supply chains

Cassiterite and Wolframite in South Kivu go through similar processes and are distributed in the same way through the same supply chain actors. Artisanal miners mine and process (sort, wash, crush) cassiterite and wolframite ore on site before selling it to managers who carry it on foot from mines to the nearest trading post (e.g. Nzibira) where it is sold to *négociants* who typically transport it to Bukavu for export. Often *négociants* may also come directly to the mine to purchase ore as well.

Figure 23. Children working in the cassiterite supply chain in South Kivu communities



The ore is then generally sold by *négociants* to *comptoirs* in Bukavu who will load the ore in large drums and exported by truck (generally in 25-ton loads) through Rwanda to the ports of Mombasa or Dar es Salaam where it will be shipped to Asia for smelting. Sometimes *négociants* will bypass the *comptoirs* and smuggle the ore across the border to Rwanda to get a better price.

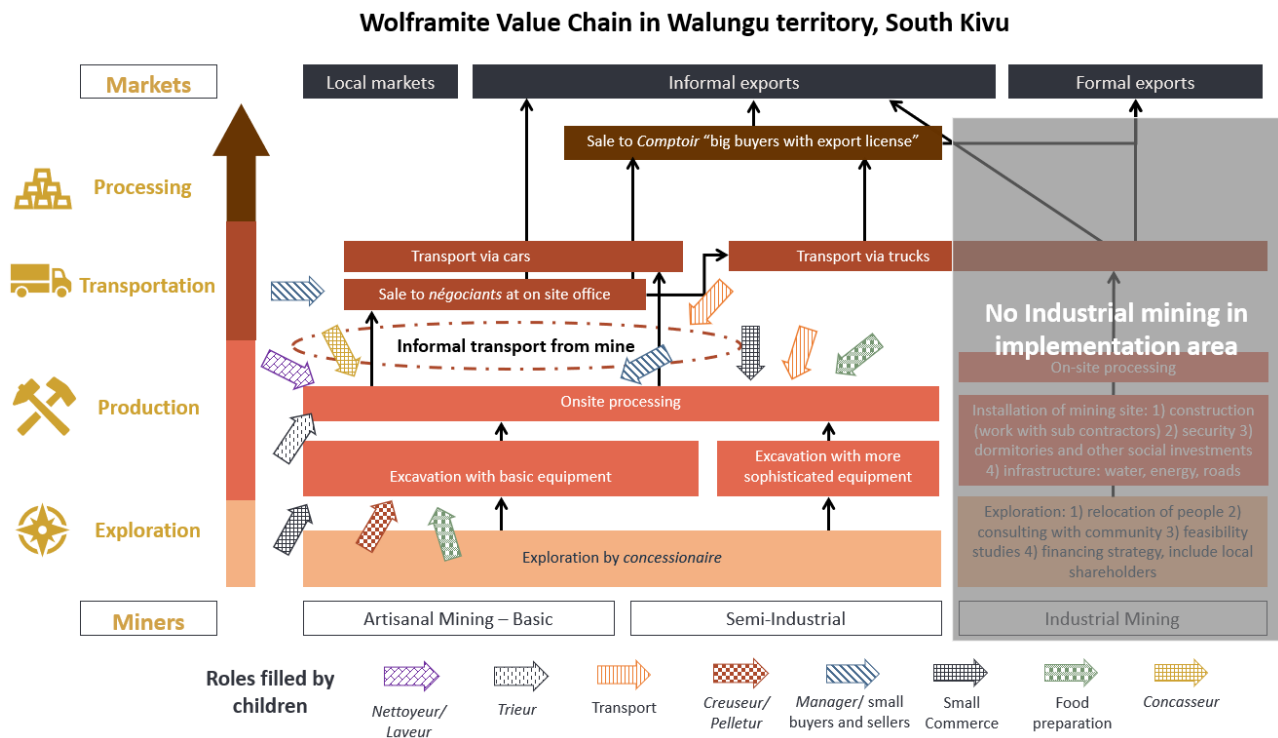
Smelting of cassiterite and wolframite is largely done in Asia. For wolframite in particular, China dominates the processing industry.⁸⁵ Wolframite is used to create tungsten, a metal commonly used to create electrodes, heating elements, light bulb filaments and cathode ray tubes. One of its most common uses is to create the element in a smart phone which allows it to vibrate when you receive a call.⁸⁶ Cassiterite is turned into tin, used for countless applications including the creation of solder, tinplating, pewter, superconducting magnets, and with increasing importance lithium-ion batteries.⁸⁷

⁸⁵ See list of tungsten processing: <https://pubs.usgs.gov/fs/2014/3069/pdf/fs2014-3069.pdf>

⁸⁶ Fairphone. "Supporting conflict-free tungsten in Rwanda," 13 January 2016. <https://www.fairphone.com/en/2016/01/13/supporting-conflict-free-tungsten-in-rwanda/>

⁸⁷ Syl Kapacyr. "Next-generation rechargeable battery made with tin," *Cornell Chronicle*, April 10, 2018. <https://news.cornell.edu/stories/2018/04/next-generation-rechargeable-battery-made-tin>

Figure 24. Children working in the wolframite supply chain in South Kivu communities



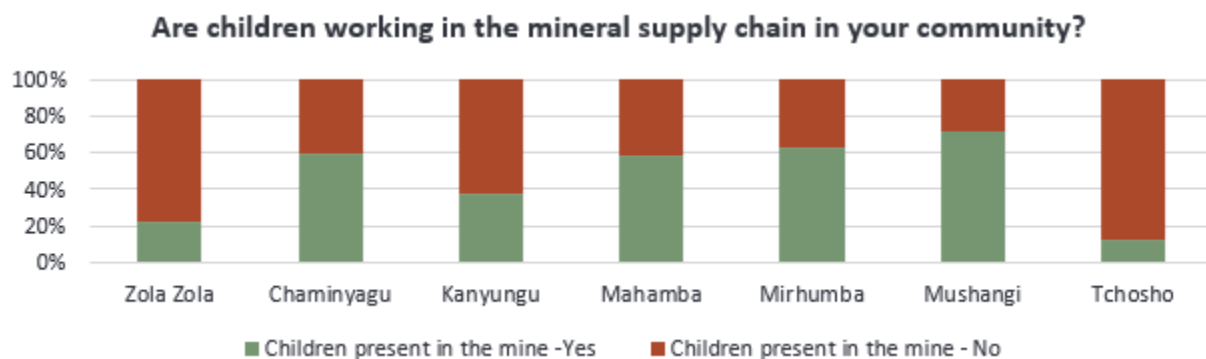
Findings on child labour in Nzibira

In the communities visited around Nzibira, children ages 10-18 work in a variety of different jobs. Some children are in school, but many children – even those who want to study – are unable to do so due to lack of resources and opportunities for education. While in some cases children are forced to support their families financially, the cost of sending children to school (even where it should in theory be free) – including tuition and food – is the primary reason children do not go to school or drop out at a young age. Even those children who attend school do so inconsistently depending on their family’s need for them to work, or in many cases they work after school hours. Those children who do not work outside of the home, are always involved in household work including fetching water, watching livestock, helping around the house or in the fields, or watching the small children.

Children work in many roles in and around the mineral supply chain, as are shown in Figures 22, 23, and 24 above. These figures show the roles where children are most commonly found in the mineral supply chains in South Kivu based on our team’s observations, interviews with artisanal miners, and focus groups with children. While the role of *creuseur* is largely restricted to children over 15 years old with some exceptions, it is common to find children under the age of 15 in many other roles around the mining sites. The most common of these by far are in washing and sorting minerals from debris. Other roles played by children in the supply chain include as transporters around the site and small buyers and sellers around the site and between the site and the *négociants* in the villages. Children work also in other roles around the mines that are not directly associated with supply chains, including small commerce (e.g. airtel cards, batteries for flashlights) and selling and preparing food for the miners. From our observations and focus group discussions, it is clear that both boys and girls are both frequently

present at mining sites, though quantification was not possible since children were most often cleared out of the mining sites by the time the Just Results team arrived.

Figure 25. Artisanal miners’ responses on the presence of children at mining sites varied significantly



Artisanal miners whom we interviewed reported that children were involved in the mineral supply chain in some way at every community we visited, though at different levels. While this variance could be due to sample size, it also could be – based on our interviews – a consequence of varying levels of supervision by (or deals made with) the mining police. A *creuseur* at Mirhumba told us, “In this community, it is said that children are prohibited from accessing the mine but in reality, they are there and play the role of shovelers. They work in transport, they wash and are even *creuseurs* if they are strong enough.”⁸⁸

Child worker profile: Chaminyagu*

Marie is an 11-year-old girl who works around the mining pits at Chaminyagu. She works with the other *mama twagaise* carrying and crushing the minerals brought up from the pits by the *creuseurs*. Marie started working to help her mother find food for their family and to be able to buy medicine for her father who is sick.

She told us about her day, “My role is to pound the stones which have cassiterite in them in the mortar. I work for our neighbor, he owns the pit...I arrive at the mine every day in the afternoon after I get out of school.” When Marie does not have work to do at the mine, she resorts to selling various small items to the miners. She works very hard but is always at risk of not being able to make a living. “I carry heavy loads and if I can't get them back to my destination I might not get paid.”

*Artisanal Miner interview (Chaminyagu-10), Marie is a pseudonym given to protect the identity of the child

The dominance of informal trade of minerals at many of these sites around Nzibira (especially with gold) also may factor into the willingness to be open about children working in the mines. Additional compounding factors are the extremely rural conditions and minimal footprint which cooperatives and government agents have at many of these sites. A *chef de chantier* at Zola Zola said he had been working in the mines since he was a child, “This is our place. If you are tired of studying, you automatically go into minerals. I have been here since 1999.”⁸⁹

⁸⁸ Artisanal Miner interview (Mirhumba-1)

⁸⁹ Artisanal Miner interview (Zola Zola-5)

Outside of the mineral supply chain, children also work in many other roles in the communities which we visited. Common roles in other sectors for children in communities around Nzibira include the following (these roles are the same for boys and girls, though girls are somewhat more likely to work in the home):

- **Agriculture:** clearing fields, planting, working in the fields, selling produce
- **Commerce:** Small commerce (such as selling fruit, pastries, peanuts, batteries, airtel cards), working in bars and restaurants, washing motorcycles and small passenger cars (in Nzibira centre)
- **Livestock:** Watching and feeding livestock, milking cows and goats, producing cheese
- **Transport:** Carrying parcels by foot between villages and mining sites, villages and the market, and from the market to the villages, from fields to markets, unloading trucks, and transporting dairy and agricultural products from the farm to the markets.

Cross-cutting issues

Sizing the child labour issue in the mineral supply chains

Quantifying the child labor in the mines is a real challenge, particularly since site managers would almost always make sure children were not at the pits when we arrived. However, taking a step back and looking at larger figures for DRC can help us get a picture of the scope of the challenge.

UNESCO found that 35.8% of children in DRC as a whole are engaged in child labor. Using this number – which is probably low for the Kivus – and based on the estimated population in the Kivus age 0-14, which is 4.54 million, a very conservative estimate of the number of children subjected to child labor is 1.63 million in the Kivus.⁹⁰ For context, this means nearly 6% of all children subjected to child labor in the continent of Africa are in the provinces of North Kivu and South Kivu.⁹¹ However, these numbers are neither confined to the worst forms of child labor nor to the mining sector. If approximately 15% of the population of the Kivus is estimated to be children under 15 who work, and considering the fact that about half a million people work in the mines in the Kivus, a high-end estimate would be that 75,000 children work in some capacity in the mines. This is probably on the high end, as our focus groups and interviews indicate working children are more likely to work in other roles outside of the mining sector. Additionally, this does not include children 15-17 who are considered adults under DRC employment law. There is also a lack of data on the gender breakdown of children working in the mines, though observation and secondary research back up our focus groups findings that show both boys and girls active at mining sites.

Causes and consequences of child labor in Masisi and Nzibira

While children work openly at a few sites, at most sites authority figures (*chef de chantiers*, *cessionnaires*, cooperatives, and government officials) are largely active in trying to minimize child

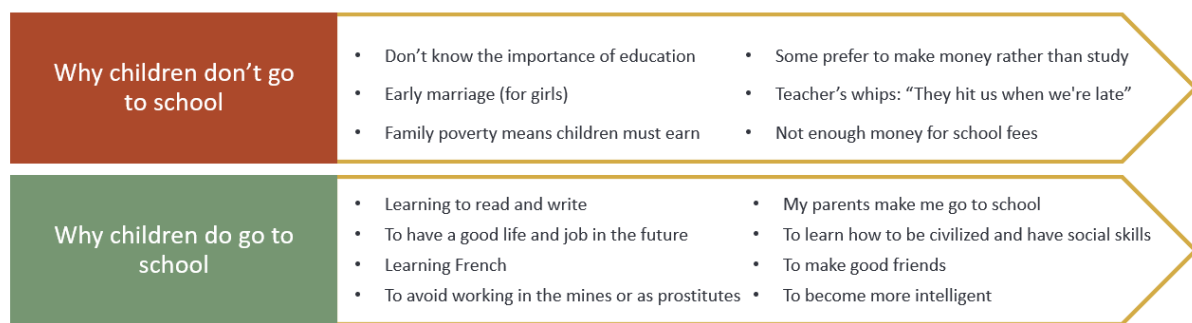
⁹⁰ Refworld. “2017 Findings on the Worst Forms of Child Labor: Democratic Republic of the Congo,” 2017.

⁹¹ Kids Rights Foundation and University of Leiden. “Minors Not Miners: Hazardous Child Labour, with a focus on gold mining in Burkina Faso,” 2014.

labor at least directly working in the pits. Despite efforts to prevent children from entering the mines at many sites, they still work in some capacity in most locations, often taking measures to work in a hidden way or come to sites after night to wash through debris left by miners to look for ore.

The challenge is that few safe alternatives provide opportunities to make enough to live, and education is often not an option for these children. They tend to be from extremely poor households, often missing one or both parents and with no recourse other than to earn for themselves. Very often helping children find work in the mine is seen as a way of helping them in their need, motivating well intentioned miners to secretly give them work. Nearly 14% of artisanal miners (evenly split across North Kivu and South Kivu) pointed out jobs in mining as the being among the best options to help children in need. For example, as a female *concasseur* (or *mama twangaise*) said: “the best way to help a child of this age who needs to earn income is to offer him work or bring him into the mine, but only if the site manager knows how to collaborate with the mining police.”⁹²

Figure 26. Education is not an option for every child⁹³



"We no longer study because before free schooling we were already advanced, so we can no longer go back to school."
"We are already used to working, so going back to school is for us the greatest punishment that can exist."
 - Child workers from the mines in Mahamba

"I gave up education when I was in 4th grade, in 2016, because of the need for money. My father had many women and children, and as he did not have a job, we children had to sacrifice in order to work to support the young"
 - Child (13-year-old) from Ruzirantaka

In other cases, children “who love money” (a common phrase) may choose to work sporadically even though their families provide them with food, because they want spending money for themselves. Education often is not an option for children due to school fees they and their families cannot afford. While free schooling is theoretically being implemented in some communities (more so in Masisi than Nzibira) it is unclear how truly free it is at this point. Even those who do go to school, often go and work in the mines after they get out of class.

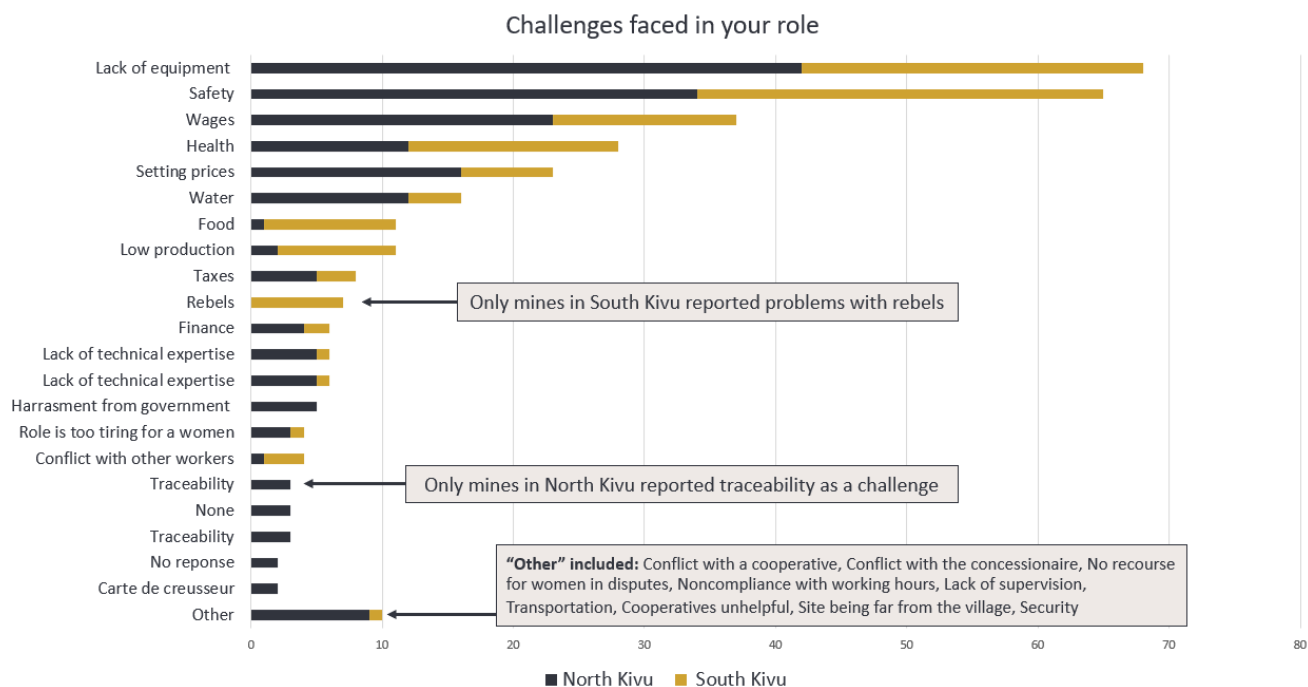
Challenges of artisanal mining

Artisanal mining is an extremely dangerous endeavor, especially for those who work inside the tunnels, but also because of the spread of disease at mining sites where there are often many bodies of sitting

⁹² Artisanal Miner interview (Mahamba-13)
⁹³ Information aggregated from FGDs with children all sites

water which become infested with malaria carrying mosquitos. Children working in and around the mine are exposed to many of these dangers.

Figure 27. Main challenges faced by artisanal miners



Among the most universal challenges for artisanal miners are the lack of equipment, safety (e.g. landslides, tunnel collapse), and health (e.g. TB, malaria). Lack of equipment is widespread both due to access (including cost) and availability. For instance, even basic tools like spades, hammers, pestles, picks, and crowbars in short supply at most sites. Safety equipment including helmets, boots, and flashlights are also often lacking. Sometimes *négociants* will finance the purchase and transportation of these items for miners, but often due to the price they go without some of them.

Other key items are almost always too expensive or just not available. This included machines to drain water from the pits, machines to pump oxygen into the tunnels to prevent asphyxiation, and explosives for blasting through rock. In North Kivu, there are more sites with machinists who can rent out these machines a business, however the machines are expensive and a machinist must have startup financing as well as be taught how to maintain and repair the machines in order to get started. As a result, most sites do without the machines and as a result production is slowed down by flooding and miners often die in the tunnels due to lack of oxygen. One young man, during a youth focus group in Kibabi, told us how he almost died of asphyxiation and only survived after other miners dragged him out and resuscitated him. A 2013 study by World Vision of children working in mining sites in the Kivus, found that of the children interviewed, 9% said they had seen another child die at an artisanal mining site, 87% experienced body pain or had been injured, 67% reported frequent or persistent coughing, and 25% experienced eye pain or difficulty with vision.⁹⁴ These findings are confirmed by what was said in the focus groups about the health and safety issues faced in the mines. AVEC (*Association Villageoise*

⁹⁴ World Vision. "Child Miners Speak: Key Findings on Children and Artisanal Mining in Kambove DRC," March 2013. https://www.wvi.org/sites/default/files/Child%20Miners%20Speak_WEB%20Version_0.pdf

d'Epargne et des Crédits) – savings and loans cooperatives are present at some sites in North Kivu (present at Rubaya, Karuba, and Kabingo) and South Kivu (present at Mahamba). A female *concasseur* (*mama twangaise*) from Mahamba described them as the one helpful organization in her community. “In this community we have two mining cooperatives that do not serve us any purpose other than to submit to regulations that serve only them. Commodity exchanges are also absent; however, we have a village savings and credit association (AVEC) that assists us financially in our small projects.”⁹⁵ AVEC shows a useful model which can help artisanal miners invest in equipment and other items which they need.

Other than lack of oxygen, safety and health issues are present at every site. Landslides are a common occurrence due to rain and these, as well as poor construction, commonly cause tunnels to collapse sometimes killing dozens of miners inside them. In our interviews with artisanal miners and focus groups with children and youth we heard many tragic stories, with many saying that they had often witness their colleagues die in the mines. Several even left the mines due to these incidents, despite few other options to earn, one when he narrowly escaped alive from a landslide and another after his brother died in a mining accident. One man in Ngungu told us, “I am a shoveler (*pelleteur*), I work in the open air in search of cassiterite. I fear the work in the tunnels, I was the victim of an accident in the tunnel, but by the grace of God I was healed. After I swore no longer to enter the tunnel. The little I earn in the open is enough for me.”⁹⁶

One innovation we heard of which is used to cut back on the number deaths in the mines, is the use of social media to report accidents. Miners and local leaders in a community use WhatsApp groups and Facebook for real time reporting and sending pictures whenever there is a landslide or some other problem, so that others in the area can see what happened and come to help quickly.

Another common concern is low wages, often blamed by the miners on their inability to set prices for the minerals. While artisanal miners rightly complain that they are susceptible to being ripped off by *négociants* because of their inability to test the quality of their minerals as well as lack of knowledge of global prices, it has also been shown that systematic exploitation by *négociants* does not explain the whole story. Rather than exploitation by any one layer of actors in the supply chain, the enormous transaction costs imposed by numerous actors taking a cut of mineral profits, often in a random and unsystematic way, forces *négociants* to charge high risk premiums and is the source of the problem. The result is that for 1kg of cassiterite (for example in South Kivu in 2015) the *négociant* would pay \$4 at the pit (the artisanal miner and pit boss would each receive \$2), he would then pay transport costs and various taxes (represented in Figure 28 below) before selling it for \$7 to the *comptoir*. The *comptoir* would then pay more taxes and transport it for export selling it for \$9. Finally, it would sell on the international markets for \$15 dollars after being processed into tin in Malaysia or China.⁹⁷ That said,

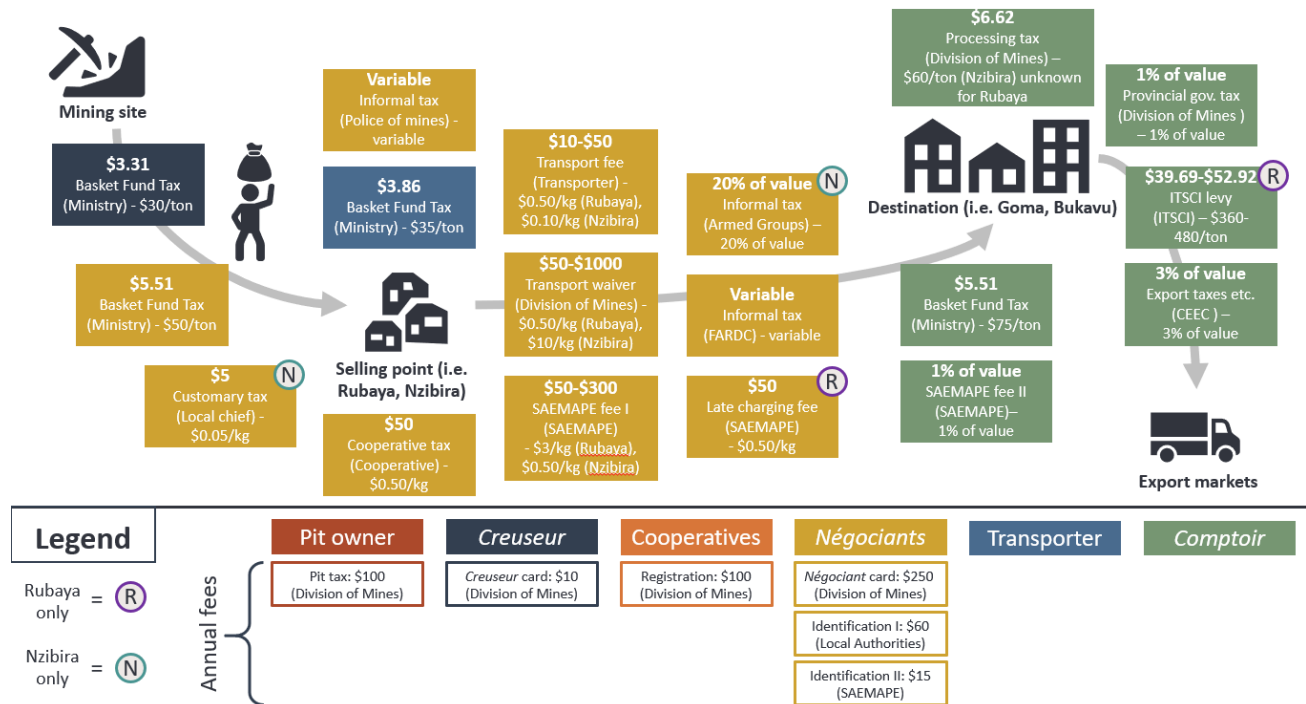
⁹⁵ Artisanal miner interview (Mahamba-12)

⁹⁶ Artisanal miner interview (Ngungu-7)

⁹⁷ Jordan de Haan and Sara Greenen. “Mining cooperatives in Eastern DRC: saviour or exploiter? The interplay between historical power relations and formal institutions,” *The Extractive Industries and Society*, June 2016. https://www.researchgate.net/publication/303779719_Mining_cooperatives_in_Eastern_DRC_The_interplay_between_historical_power_relations_and_formal_institutions

greater transparency in relation to testing the quality of minerals would almost certainly help artisanal miners see a slightly larger share of the profits than they currently do.

Figure 28. Transaction costs for 100 kg of coltan (Rubaya) or cassiterite (Nzibira) from pit to export⁹⁸



Effects of traceability initiatives

This assessment does not attempt to dive into the pros and cons of various mineral governance and traceability efforts (e.g. the OECD guidance, the Dodd-Frank Act, iTScI). There is clear indication that in many cases they have had the desired effect on reducing armed presence at mineral sites and have at least to some extent reduced the presence of children working in dangerous tasks. However, it is worth noting some of the unintended consequences these efforts have had upon artisanal miners and other actors in the supply chain. The most obvious was the infamous ban on artisanal mining that temporarily deprived thousands of people in the Kivus of their livelihoods, following the passage of the Dodd-Frank Act in 2010.⁹⁹

Less immediately apparent but probably more devastating has been the collapse of mineral prices at the local level (other than gold) caused at least in large part by iTScI's implementation. This is due to several factors:

⁹⁸ Christoph Vogel and Josaphat Musamba. "Brokers of crisis: the everyday uncertainty of Eastern Congo's mineral négociants," *Cambridge University Press*, vol. 23, November 2017.

<https://www.cambridge.org/core/journals/journal-of-modern-african-studies/article/brokers-of-crisis-the-everyday-uncertainty-of-eastern-congos-mineral-négociants/406F065DB3749076507F85A4B556589D>

⁹⁹ Nik Stoop, Marijke Verpoorten, and Peter Van der Windt. "More Legislation, More Violence? The Impact of Dodd-Frank in the Democratic Republic of the Congo," *Cato Institute Research Briefs in Economic Policy*, No. 145, January 2019. https://www.cato.org/sites/cato.org/files/pubs/pdf/rb_145.pdf

- high iTSCi fees of \$180 and \$480 per ton, which sometimes exceed the total amount of other taxes (formal and informal) which must be paid by *comptoirs*, and
- *de facto* monopsony structure created by a limited number of iTSCi-registered *comptoirs* from which international buyers are willing to purchase.

These effects have been observed to reduce artisanal miner's selling price for cassiterite by 5–20% depending on the location, with similar effects for coltan and wolframite, as well as encouraging smuggling.¹⁰⁰ Beyond this there are the delayed payments for miners caused by complications with traceability, as with the current SMB-Cooperama standoff which has led to miners not receiving their payments for a ship for over 7 months. The effect of traceability is not solely felt by artisanal miners and the *comptoirs*. *Négociants* have also experienced devastating collapses in income due to traceability. For example in Rubaya the monthly income of a *négociant* was reduced \$250 to \$50 while the number of *négociants* declined from 400 to 100.¹⁰¹

Finally, it is worth noting that while traceability has had significant positive benefits, especially in reducing armed presence at mines, it is still far from perfect in that regard. Our team observed that many bags of coltan and cassiterite in North Kivu were being tagged at the depots at selling points rather than at the mining sites as is mandatory – a clear opportunity for fraud.

Alternative livelihoods

Masisi

Agriculture is a major contributor to livelihoods for families in Masisi, as in most of the Kivus. There are a number of agricultural value chains present. One which used to be much more prevalent before the conflict, but which remains strong with an estimated 40,000 farmers in Masisi territory, is beans. Due to the conflict in Masisi over the last decade, many farmers moved away from traditional crops (work intensive and perennial crops and crops which could be easily stolen such as bananas, beans, cassava, and maize), shifting towards conflict resistant crops (low risk and seasonal crops, and those which are less likely to be stolen such as millet, peas, and taro).¹⁰² However, as of 2011, North Kivu still produced

¹⁰⁰ Christoph Vogel, Ben Radley, and Josaphat Musamba. "A Miner's Canary in Eastern Congo: Formalisation of Artisanal 3T Mining and Precarious Livelihoods in South Kivu," *The Extractive Industries and Society* vol. 5, September 2017.

https://www.researchgate.net/publication/319992248_A_Miner's_Canary_in_Eastern_Congo_Formalisation_of_Artisanal_3T_Mining_and_Precarious_Livelihoods_in_South_Kivu

¹⁰¹ Christoph Vogel and Josaphat Musamba. "Brokers of crisis: the everyday uncertainty of Eastern Congo's mineral négociants," *Cambridge University Press*, vol. 23, November 2017.

<https://www.cambridge.org/core/journals/journal-of-modern-african-studies/article/brokers-of-crisis-the-everyday-uncertainty-of-eastern-congos-mineral-négociants/406F065DB3749076507F85A4B556589D>

¹⁰² Koen Vlassenroot Timothy Raeymaekers. "Crisis and food security profile: The Democratic Republic of the Congo," *Practical Action*, October 14, 2013.

<https://www.developmentbookshelf.com/doi/abs/10.3362/9781780440057.008>

Shahriar Kibriya, Graham Savio, Edwin Price, and Joseph King. "The Role of Conflict in Farmers' Crop Choices in North Kivu, Democratic Republic of the Congo," *International Food and Agribusiness Management Review*, vol 19 no. 3, 2016. <https://www.ifama.org/resources/Documents/v19i3/520160047.pdf>

70% of DRC's bean output, with production centered around Masisi and Rutshuru.¹⁰³ Due to its high altitude, Masisi is also home to a significant amount of potato production, including varieties such as Cruza, Montsama, Kinigi, Nseko, Gasore, Mabondo, Gahinga, and Sangema.¹⁰⁴ Another key value chain is livestock, especially dairy production. In fact, Masisi is famous for the production of a gouda-like cheese known as "Masisi gouda" or "Goma cheese," which is the only major cheese produced in DRC.¹⁰⁵ While cheese is not a traditional part of the diet in DRC, cheese from Masisi – first introduced by Belgian monks in the 1970s and then further cultivated through an FAO training program – has become increasingly popular and is exported across the country to Kinshasa.¹⁰⁶

High potential sectors and income generating opportunities

Due to Masisi territory's traditional pastoral and agricultural culture, fertile soil, and favorable climate, agriculture and livestock are among the most promising sectors outside of mining. However, given the fact that many people in Masisi are not originally from there but are IDPs or immigrants from other territories, they may not have land making agriculture and breeding livestock more difficult. Because of this, opportunities in commerce and transport as well as agricultural transformation may provide more accessible options to many people. Drawing from conversations with the residents of these communities – including community leaders, artisanal miners, children, youth, and women – as well as the observations of the field research team, this section compiles the opportunities identified across sectors. While there is also demand for some high skilled jobs in some places (e.g. agronomists, accountants, geologists, veterinarians) the report highlights the most appropriate opportunities as safe and decent alternatives to working in the mines for children and their families, and those that can be easily accessible with some training.

Because of the rich soil as well as local preference for organic produce, agriculture in Masisi is conducted without the use of chemical fertilizers. Most farmers either use no fertilizer or only organic fertilizer (largely compost from household livestock manure).¹⁰⁷ Many crops are grown in the communities which we visited. Among the most common were potatoes, sweet potatoes, maize, and sugar cane. Other crops which are grown include beans, cabbage, cassava, fruit, leeks, millet, and sorghum. In addition to selling produce, there are opportunities for value-added products as well (see Table 6).

Challenges that must be addressed to increase agricultural productivity include:

¹⁰³ACDI/VOCA. "Assessment of The DRC's Agricultural Market Systems: Value Chains in The North & South Kivu And Katanga Province," *Leveraging Economic Opportunities Report*, no 16, April 2015.

¹⁰⁴ACDI/VOCA. "Assessment of the DRC's Agricultural Market Systems: Value Chains in The North & South Kivu And Katanga Province," *Leveraging Economic Opportunities Report*, no. 16, April 2015.

¹⁰⁵ Economist. "The world's least blessed cheesemakers are in Congo," September 13, 2018.

<https://www.economist.com/middle-east-and-africa/2018/09/13/the-worlds-least-blessed-cheesemakers-are-in-congo>

¹⁰⁶Julian Plovnick. "'The Switzerland of Africa': Fine Cheesemaking in the Congo," *The Word on Cheese Culture*, June 17, 2015. <https://culturecheesemag.com/cheese-bites/switzerland-africa-fine-cheesemaking-congo>

¹⁰⁷ACDI/VOCA. "Assessment of the DRCs Agricultural Market Systems: Value Chains in The North & South Kivu and Katanga Provinces," USAID, *Leveraging Economic Opportunities* #16, April 2015.

- 1) Improved seeds: most farmers use old seeds which have been degraded and are less productive. A recent study of farmers in South Kivu showed that 75% of farmers do not have access to improved seeds.¹⁰⁸
- 2) Teaching farmers proper agronomic practice: there is little knowledge of crop diversification and other practices necessary to improve productivity

Raising livestock is a promising sector in Masisi due to the rich culture of herding. Cows and goats are most commonly raised, for meat, dairy, and leather. Raising poultry can be an opportunity, as many are focused on breeding of cows and goats and eggs are popular in for sale in the mining sites. Additionally, several dairy products provide opportunities, as shown in Table 6.

Since artisanal miners have the most money to spend in most of these communities, mining sites are central for opportunities in commerce. Small commerce of commonly demanded items such as airtime cards, batteries, flashlight, bandages, and even some luxury items, are promising alternatives to working directly in the mines. Table 6 shows many other alternatives in commerce, both in production of goods as well as services which are in demand in these communities

Transport is often difficult due to poor quality infrastructure, however there are opportunities, especially in the transportation of agricultural goods and mining products. Most transportation is done on foot (carrying parcels) or by motorbike. At some of the selling points, it is common for children and youth to be hired to help load or unload trucks. Washing vehicles is another common job in the bigger villages and at selling points like Rubaya.

Based on our field work, were able to collect information on the opportunities that are available in all or most of the communities in the intervention area. Table 6, below, summarizes a subset of these opportunities which we found are best suited to the education and skill levels of working age girls, boys, women, and men in these communities. Most of these opportunities will require some level of training and start-up capital, but with the right interventions, they are accessible to key PACE target populations (as noted in the recommendations section). Other roles with higher levels of skill and education are also in demand, such as geologist, agronomists, and accountants. While these roles may not be accessible for most of the population in the intervention areas, they represent key “bottleneck” jobs which should be filled to allow key value chains to grow.

There are four or more sectors represented in most communities, in addition to mining. Assessing the opportunities along the entire value chain allows us to identify entry points for working age girls, boys, women, and men in the intervention areas within the context of the larger market. Take, for example, the opportunities available at each stage in the bean value chain:

- **Production:** Farmers, farm laborers (ploughing, planting, weeding, harvesting), agronomists
- **Post-harvest treatment:** Farm laborers (husking, sorting, drying)
- **Processing:** Packaging, labeling, preserving, value-add production (e.g. bean paste)
- **Transport:** Delivery of goods to towns and cities by transporters or by farmers, delivery of inputs to communities from city by transporters or *négociants*
- **End markets:** Cooperatives, bulk buyers (NGOs, FARDC, schools), wholesalers, retailers

¹⁰⁸ Mercy Corps. “Market Systems Assessment: Kabare & Kalehe Territories, South Kivu, DR Congo,” USAID, South Kivu Food Security Project, May 2018.

While opportunities at end markets and in higher skilled jobs, such as agronomist, are not accessible to target populations in these communities, there are clear opportunities at the production, post-harvest treatment, and processing levels of the value chain (especially new opportunities for value addition). These opportunities require skills which are accessible to target populations through training (soft skills such as professional behavior and motivation, knowledge of farming and processing practices, and basic numeracy).

Table 6. Potential alternative employment and self-employment opportunities in Masisi territory

Sector	Opportunities
Agriculture	<ul style="list-style-type: none"> • Grow crops: Beans, cabbage, cassava, fruit, leeks, maize, millet, potatoes, sorghum, sugar cane, and sweet potatoes • Flour production: 1) Maize flour 2) Cassava flour • Bean products: Bean fortification, bean paste
Livestock	<ul style="list-style-type: none"> • Breeding: Cows, goats, pigs, poultry, rabbits (for meat, eggs, dairy, or leather which is either used locally or exported to Rwanda or Uganda) • Fish farming: Must have some land to create artificial ponds • Meat: Beef, rabbit, pork, poultry; also sausage making • Cheese production: Goma cheese/Masisi gouda • Yoghurt: Production and packaging • Milk: Powdered milk production to avoid quick spoilage
Commerce	<ul style="list-style-type: none"> • Small-scale commerce: e.g. airtel cars, batteries, flashlights, pharmaceutical products (such as bandages, ointments, medicine), thrift clothing • Soap: Production and sale • Construction: 1) Brick making 2) Masonry 3) Carpentry • Machinist: Purchase machines to drain mining pits of water, or else machines to pump oxygen into tunnels and rent services to artisanal miners • Leatherwork: Using cow skins for hats, belts, and wallets

	<ul style="list-style-type: none"> • Shoemaker: High quality shoes are commonly produced in Goma, with training this could be done in the villages as well using cow skins from those raising livestock • Tailor/seamstress: Sewing or mending clothing • Jewelry: Many colored stones and semi-precious gemstones such amethyst, quartz, and tourmaline are dug up at mining sites and could be used to make jewelry to sell • Hairdressers: In high demand around mining sites • Bakery/meal preparation: Baked goods as well as prepared meals are popular among artisanal miners • Cafeteria/restaurants: Present at many mining sites and villages, they provide opportunities for employment or two start a new business • Security: Guarding businesses or minerals
Transport	<ul style="list-style-type: none"> • Motorbike driver: Must know how to drive and get a bike) • Auto mechanic: Repair motorbikes, cars, and trucks • Vehicle washing: In demand, especially at selling points and larger villages • Loading/unloading: At selling points there are frequent opportunities to be hired to load and unload the trucks

Nzibira

Walungu territory used to be the primary center of food production for Bukavu. However, demographic changes and the conflict have impacted the agricultural value chains and led to a large number of landless households.¹⁰⁹ Among the major crop value chains present in Walungu, beans, cassava, maize, and soybeans are among the most prevalent. Bananas were a staple crop in the past, but a recent epidemic of banana wilt disease has decimated crops populations.¹¹⁰ Coffee has not yet become a major crop, but has been introduced by a number of NGOs and through USAID’s Feed the Future project.¹¹¹ While the cattle population is lower in Walungu than elsewhere in the Kivus, livestock and

¹⁰⁹ Koen Vlassenroot. “Households land use strategies in a protracted crisis context: land tenure, conflict and food security in eastern DRC,” 2006. <http://www.fao.org/3/a-ag306e.pdf>

¹¹⁰ ACDI/VOCA. “Assessment of The DRC’s Agricultural Market Systems: Value Chains in The North & South Kivu And Katanga Province,” *Leveraging Economic Opportunities Report*, no 16, April 2015.

¹¹¹ USAID. “Democratic Republic of the Congo Fact Sheet: Economic Growth,” Accessed January 27, 2020. <https://www.usaid.gov/democratic-republic-congo/fact-sheets/economic-growth>

small-animal husbandry are still a prominent value chain.¹¹² Land disputes between herders and farmers are a source of frequent conflict in Walungu territory.¹¹³

High potential sectors and income generating opportunities

Walungu territory has great yet mostly unrealized agricultural potential. While not as fertile as Masisi territory, there is ample opportunity for agriculture and raising livestock, yet the territory is stricken with food insecurity and even requires food to be shipped out from Bukavu to the villages. Exemplifying this is the fact that only 1% of Bukavu's bean consumption is produced in South Kivu (almost all of it is shipped from North Kivu by boat from Goma), even though beans are a prime crop for South Kivu.¹¹⁴ Like in Masisi, however, many people do not have access to land, making agriculture and breeding livestock difficult for them. Because of this, as in Masisi, opportunities in commerce and transport as well as agricultural transformation may provide more accessible options to many people. Based on our conversations with the residents of these communities – including community leaders, artisanal miners, children, youth, and women – as well as the observations of our team throughout our fieldwork, this section has compiled the various opportunities across these sectors. While there is also demand for some high skilled jobs in some places (e.g. agronomists, accountants, geologists, veterinarians) we have selected those opportunities which are most appropriate as safe and decent alternatives to working in the mines for children and their families and can be easily accessible with some training.

In South Kivu, as in most of Eastern DRC, most farmers either use no fertilizer or only organic fertilizer (largely compost from household livestock manure).¹¹⁵ Many crops are grown in the communities which we visited. Among the most common were cassava and sweet potatoes. Other crops which are grown include bananas, beans, horticulture, maize, potatoes, soybeans, and even coffee (in Mirhumba only). In addition to selling produce, there are opportunities for value added products as well (see Table 7).

Challenges which need to be addressed to increase agricultural productivity are the same issues as in Masisi and include:

- 1) Improved seeds: most farmers use old seeds which have been degraded and are less productive. A recent study of farmers in South Kivu showed that 75% of farmers do not have access to improved seeds.¹¹⁶
- 2) Teaching farmers proper agronomic practice: there is little knowledge of crop diversification and other practices necessary to improve productivity.

Commonly raised livestock include cows, goats, pigs, poultry, and rabbits. Unlike Masisi territory, herding is usually smaller scale and there is no robust leather export trade. However, there are still

¹¹² ACIDI/VOCA. "Assessment of The DRC's Agricultural Market Systems: Value Chains in The North & South Kivu And Katanga Province," *Leveraging Economic Opportunities Report*, no 16, April 2015.

¹¹³ Banyan Global. "Feed the Future Democratic Republic of the Congo Strengthening Value Chains Activity: Gender, Social Inclusion, and Conflict Mitigation Strategy," December 15, 2017. <https://banyanglobal.com/wp-content/uploads/2018/02/Feed-the-Future-DRC-SVC-GSICM-Strategy-15-Dec-2017.pdf>

¹¹⁴ Mercy Corps. "Market Systems Assessment: Kabare & Kalehe Territories, South Kivu, DR Congo," USAID, South Kivu Food Security Project, May 2018.

¹¹⁵ ACIDI/VOCA. "Assessment of the DRCs Agricultural Market Systems: Value Chains in The North & South Kivu and Katanga Provinces," USAID, *Leveraging Economic Opportunities* #16, April 2015.

¹¹⁶ Mercy Corps. "Market Systems Assessment: Kabare & Kalehe Territories, South Kivu, DR Congo," USAID, South Kivu Food Security Project, May 2018.

many opportunities to create leather products for local consumption as well as raise livestock for meat, eggs, and dairy (see Table 7). One new product that may be of particular interest would be to develop cheese production in South Kivu. Traditionally cheese production has been relegated to Masisi territory and Goma, however we heard that it is now being exported to Bukavu. If this is the case, it may well be possible to generate demand for locally produced cheese as well.

Other than Nzibira town, all the sites we visited in South Kivu are extremely rural with mining sites that tend to have much smaller numbers of miners compared to in Masisi territory. This unfortunately means many commerce opportunities will only be available in Nzibira. However, there is an opportunity to bring some of these activities to the smaller villages (especially in the production of products that could be sold to miners or in Nzibira itself).

Transport is often difficult due to poor quality infrastructure; however there are opportunities, especially in the transportation of agricultural goods and mining products. Most transportation is done on foot (carrying parcels) or by motorbike. At some of the selling points, it is common for children and youth to be hired to help load or unload trucks. Washing vehicles is another common job in the bigger villages and at selling points like Nzibira.

Based on our field work, were able to collect information on the opportunities that are available in all or most of the communities in the intervention area. Table 7, below, summarizes a subset of these opportunities which we found are best suited to the education and skill levels of working age girls, boys, women and men in these communities. Most of these opportunities will require some level of training and startup capital with the right interventions are accessible to key populations (addressed in the recommendations) but. Other roles with higher levels of skill and education are also in demand, such as geologist, agronomists, and accountants. While these roles are not accessible for most of population in the intervention areas, they represent key “bottleneck” jobs which should eb filled to allow key value chains to grow.

There are four or more sectors represented in most communities, in addition to mining. Assessing the opportunities along the entire value chain allows us to identify entry points for working age girls, boys, women and men in the intervention areas within the context of the larger market. Take for example the opportunities available at each stage in the bean value chain:

- **Production:** Farmers, farm laborers (ploughing, planting, weeding, harvesting), agronomists
- **Post-harvest treatment:** Farm laborers (husking, sorting, drying)
- **Processing:** Packaging, labeling, preserving, value-add production (e.g. bean paste)
- **Transport:** Delivery of goods to towns and cities by transporters or by farmers, Delivery of inputs to communities from city by transporters or *négociants*
- **End markets:** Cooperatives, bulk buyers (NGOs, FARDC, schools), wholesalers, retailers

While opportunities at end markets and in higher skilled jobs, such as agronomist, are not accessible to target populations in these communities, there are clear opportunities at the production, post-harvest treatment, and processing levels of the value chain (especially new opportunities for value addition). These opportunities require skills which are accessible to target populations through training (soft skills such as professional behavior and motivation, knowledge of farming and processing practices, and basic numeracy).

Table 7. Potential alternative employment and self-employment opportunities in and around Nzibira

Sector	Opportunities
Agriculture	<ul style="list-style-type: none"> • Grow crops: Bananas, beans, cassava, coffee, horticulture, maize, potatoes, soybeans, and sweet potatoes • Flour production: 1) Maize flour 2) Cassava flour • Bean products: Bean fortification, bean paste
Livestock	<ul style="list-style-type: none"> • Breeding: Cows, goats, pigs, poultry, rabbits (for meat, eggs, dairy, or leather for local production) • Fish farming: Must have some land to create artificial ponds • Meat: Beef, rabbit, pork, poultry; also sausage making • Cheese production: Bring methods of cheese production from Masisi to develop cheese production in Nzibira and surrounding villages • Yoghurt: Production and packaging • Milk: Powdered milk production to avoid quick spoilage
Commerce	<ul style="list-style-type: none"> • Small-scale commerce: e.g. airtel cars, batteries, flashlights, pharmaceutical products (such as bandages, ointments, medicine), thrift clothing • Soap: Production and sale • Construction: 1) Brick making 2) Masonry 3) Carpentry • Machinist: Purchase machines to drain mining pits of water, or else machines to pump oxygen into tunnels and rent services to artisanal miners • Leatherwork: Using cow skins for hats, belts, and wallets • Shoemaker: High quality shoes are commonly produced in Goma, with training this could be done in the villages as well using cow skins from those raising livestock • Tailor/seamstress: Sewing or mending clothing • Hairdressers: In high demand around mining sites • Bakery/meal preparation: Baked goods as well as prepared meals are popular among artisanal miners

	<ul style="list-style-type: none"> • Cafeteria/restaurants/hotels: Present at many mining sites and villages, they provide opportunities for employment or two start a new business • Security: Guarding businesses or minerals
Transport	<ul style="list-style-type: none"> • Motorbike driver: Must know how to drive and get a bike) • Auto mechanic: Repair motorbikes, cars, and trucks • Vehicle washing: In demand, especially at selling points and larger villages • Loading/unloading: At Nzibira there are opportunities to be hired to load and unload the trucks

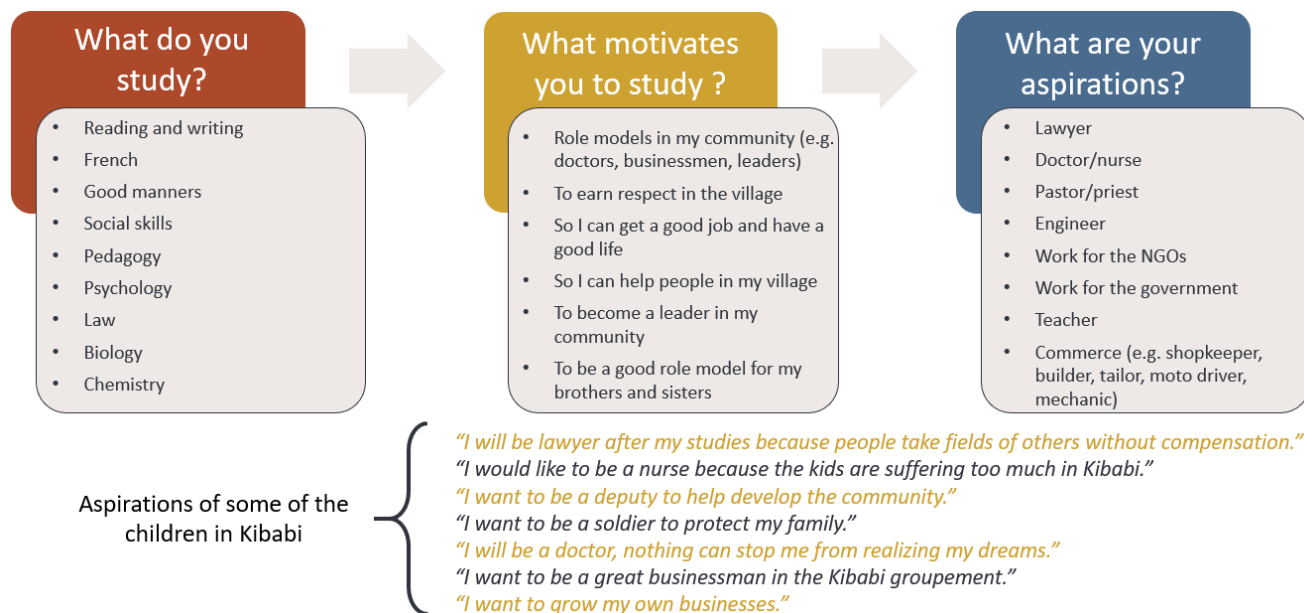
Cross-cutting issues

Preferences and aspirations

At the heart of our focus group discussions was a goal of assessing the dynamics at play in a child’s employment in the mines, both in terms of alternative opportunities, decision making, and aspirations. Unsurprisingly, children in these villages have much the same kinds of aspirations as children throughout the rest of the world. They want to become lawyers, doctors, politicians, teachers – one even said he wanted to be President of DRC when he grew up. Unfortunately, the opportunities for them to achieve their aspirations are few and far between, and when most of them drop out of school their chances go from slim to none.

While some children complained about school and said they only attended because their parents made them, most were eager to learn, motivated by role models in their communities such as doctors, teachers, and *négociants*. Schools exist in or around all the communities the team visited, but teachers are still forced to charge fees for attendance to cover costs since schools are poorly funded in DRC. This means many children, and invariably the poorest and most vulnerable, are left with no way of attending school. Some children who are motivated, work in the mines or elsewhere at night to earn enough for their school fees. Others go to school intermittently so they can work some days to pay for the school the others, but they often are beaten by their teachers for missing classes.

Figure 29. Children have the same kinds of aspirations as all children, but few options to attain them



Children who don't go to school at all, also end up working in mines or elsewhere. We noticed some typical patterns of work for children across different age groups. For instance, a 10-year old's work is mostly relegated to work around the home (e.g. fetching water, watching livestock) while some work at restaurants and bars as cleaners, others resort to criminality. At 15 years old, working in the mines or in the fields are most common for those children not in school, while many also engage in various forms of small commerce around the mining sites. At 18 years old, many girls have married or if they have not may be forced into or resort to sex work. Boys (and some girls) work in the mines or the fields, while those who are more fortunate are able to get a motorbike and work in transport. A norm which we confirmed is that if a child has their own children, they are considered an adult, no matter their age. This is a widespread social norm in the cities as well as the rural areas.

Key to finding safe alternatives to the worst forms of child labor is to make sure that those alternatives align with the preferences of the children and their families. Most interesting, is the fact that the mining sector is generally considered undesirable by children and youth, even by those working in it (*négociant* role is the exception). Mothers, perhaps out of pragmatism, pointed to washing and transport as "good" mining jobs, while also agreeing that working as a *creuseur* is highly undesirable despite the higher pay. Going to the army (the FARDC) is also seen as a bad job. One youth from explained that they "do not want to die in the hands of the rebels (Raia Mutomboki) who use supernatural powers."¹¹⁷ While for younger children, most jobs are the same for boys and girls, for older children and youth men are more likely to prefer to work in transport or jobs which require high education levels (e.g. lawyer, doctor, teacher).

¹¹⁷ Focus group with youth (Chaminyagu)

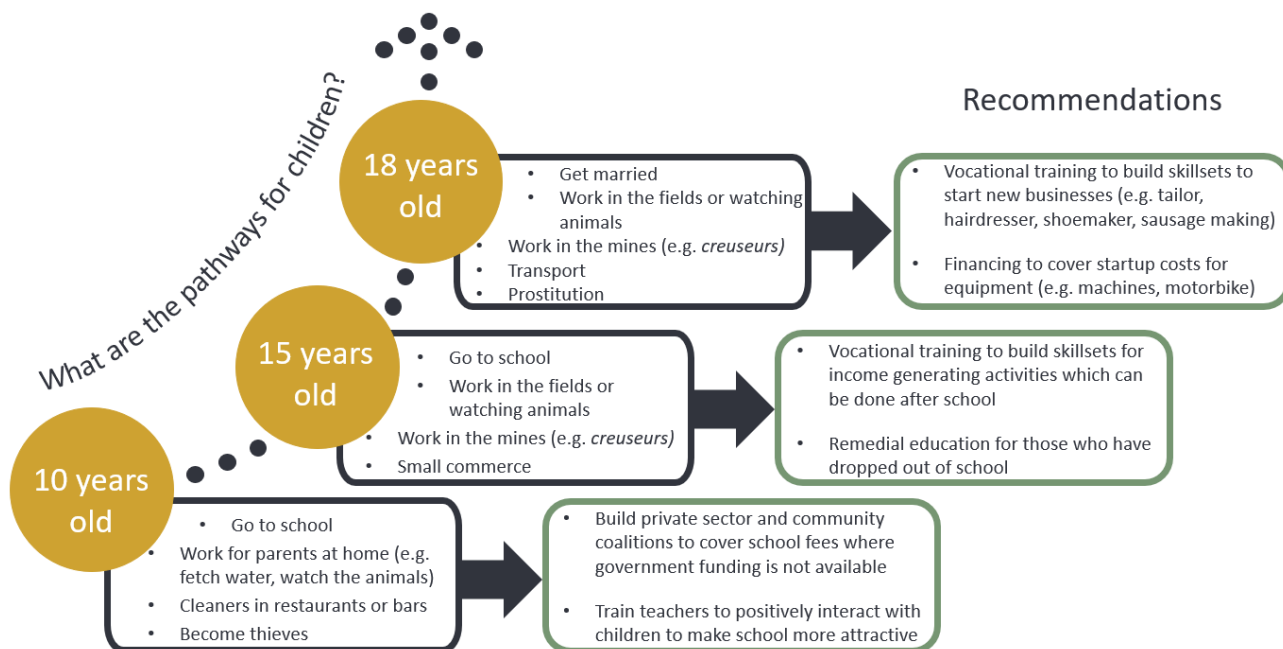
Table 8. Livelihood preferences do not favor mining or transportation by foot

Focus Group Respondents	Desirable jobs	Undesirable jobs
Children (10-17)	<ul style="list-style-type: none"> • Motorbike driver • Mining (especially being a being a <i>négociant</i> or <i>cessionnaire</i>) • Livestock • Agriculture • Commerce 	<ul style="list-style-type: none"> • Transport of parcels by foot • Mining (being a <i>creuseur</i> in the pits) • Sex work
Youth (18-28)	<ul style="list-style-type: none"> • Motorbike driver • Mining (<i>négociant</i>) • Seamstress • Lawyer • Doctor • Agriculture (if you have enough land for large fields) • Livestock • Teacher • Mechanic • Commerce • Restaurants • Construction (carpentry/masonry) • Charcoal manufacturing 	<ul style="list-style-type: none"> • Transport of parcels by foot • Mining (being a <i>creuseur</i> in the pits) • Thief • Army • Police • Agriculture (working in someone else’s fields) • Sex work
Mothers (for their children)	<ul style="list-style-type: none"> • Agriculture • Commerce • Livestock • Mining (washing and transport) 	<ul style="list-style-type: none"> • Mining (being a <i>creuseur</i> in the pits) • Sex work • Army

While most younger children and their parents attribute the decision-making process regarding children’s daily activities to their parents, it was also frequently noted that children disobey (usually to go to work rather than school) or often parents are not present to guide their decision-making. Our focus groups with women indicated that the two main drivers in their decision-making process were generally a desire to make sure their family had enough food to live and that their children would get an education, so that they will “be happy”, “grow up well, find a good life and have a beautiful family”, and so that they “can have a job that keeps them from wandering.”¹¹⁸ Figure 30 below shows the roles which children play at different ages along with recommended roles for children at each age.

¹¹⁸ Focus groups with women (Ngungu, Kiibabi, Zola Zola)

Figure 30. Children have the same kinds of aspirations as all children, but few options to attain them

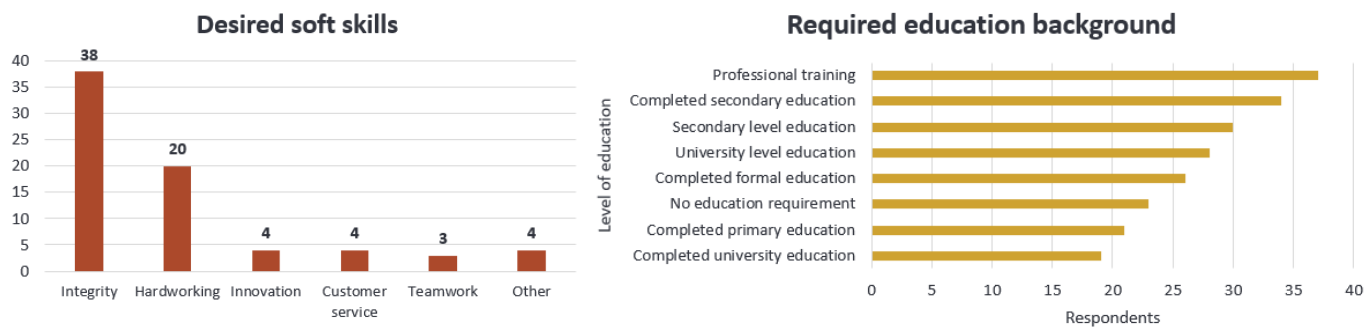


Most of the children we spoke with had never even considered the possibility of leaving their communities in search of better opportunities, never mind leaving DRC. Much the same was true among the youth, though more of them had considered going to Uganda for education or to Rwanda for security reasons. The more cosmopolitan communities of Rubaya and Matanda were the exceptions, where some youth had already gone to Rwanda and Uganda to buy things to sell in DRC, but more often expressed interest in moving to the US or Europe or within Africa to Tanzania or Angola, which were seen as places where someone could make a lot of money easily. Mothers were more open to their children moving away from DRC either to receive a better education or else for a better life and to be able to send money back to their families in the village.

Education and skills

Given the rural context of most of the communities which we visited, employment outside of the mining sector is scarce or non-existent. In towns like Rubaya and Nzibira where there are employers, interviewees most commonly expressed a desire for employees who were hardworking and had integrity. Either professional training (e.g. sewing, cooking) or a secondary level education were the most common prerequisites for employment.

Figure 31. Employers most value integrity along with professional training or secondary education



While formal employment opportunities are few and far between, there are many opportunities for self employment and entrepreneurship in both territories (see sections above). These kinds of opportunities can generally be classified into four groups with associated skillsets (soft skills are by far the most important), demonstrated with examples in Table 9 below.

- **Transformation/Production - Business to business (B2B):** These are largely individuals who are producing something and reselling to a wholesaler (e.g. eggs). Key skills include relevant technical skills and customer service.
- **Transformation/Production - Business to customer (B2C):** These are individuals who produce their goods and sell them directly to consumers (e.g. juice). Key skills include relevant technical skills and customer service.
- **Sale of goods:** Individuals who buy and then resell various goods (e.g. airtime cards, agricultural products). Key skills are customer service and motivation.
- **Sale of services:** Individuals who sell services to customers (e.g. sewing, hairstyling). Key skills include relevant technical skills and customer service.”

Table 9. Modes of self-employment and associated key skills¹¹⁹

Self-employment type	Key skills
Production - Business to business (B2B) - e.g. production of items for a wholesaler (largely not present in these communities)	<ul style="list-style-type: none"> • Relevant technical skills • Customer service skill
Production - Business to customer (B2C) - e.g. Soap, leather items, dairy products, tailor	<ul style="list-style-type: none"> • Relevant technical skills • Customer service skill
Sale of goods - e.g. Airtime cards, food items, thrift clothing	<ul style="list-style-type: none"> • Customer service skills • Motivation
Sale of services - e.g. Machinist, mechanic, security	<ul style="list-style-type: none"> • Relevant technical skills • Customer service skill

¹¹⁹ EDC.” Youth opportunities assessment - North Kivu and South Kivu,” USAID, (forthcoming).

Hiring and business growth

Employment opportunities among businesses interviewed were fairly evenly split between full-time positions and part-time or seasonal and contractual roles. Hiring typically happens through acquaintances or by word of mouth. Virtually no formal hiring mechanisms exist, especially outside of Goma and Bukavu. Two key drivers of this are the prevalence of theft and the associated emphasis on integrity that tends to favor friends and family members more as known entities, as well as most employers complete lack of knowledge of how to define and evaluate skill sets necessary for the roles for which they are hiring. This information gap goes two ways, as job seekers also lack the understanding of the labor market and necessary skills required for employment.¹²⁰ This issue is more pronounced in larger towns and in the cities, whereas in the more rural mining villages there are few employment opportunities and those which exist (e.g. mining and transportation) have skillsets which are fairly well known and understood.

Most businesses interviewed did not have immediately available opportunities (only 16 total availabilities were noted) and when they did they were largely for high skill roles such as geologist (there are also 5 openings with less demanding qualifications, including a security guard, sales agent, and cleaner).

Figure 32. Less than half of roles are full-time positions
Forms of employment

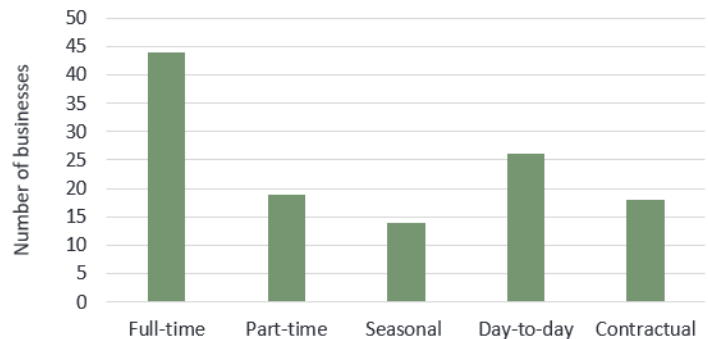
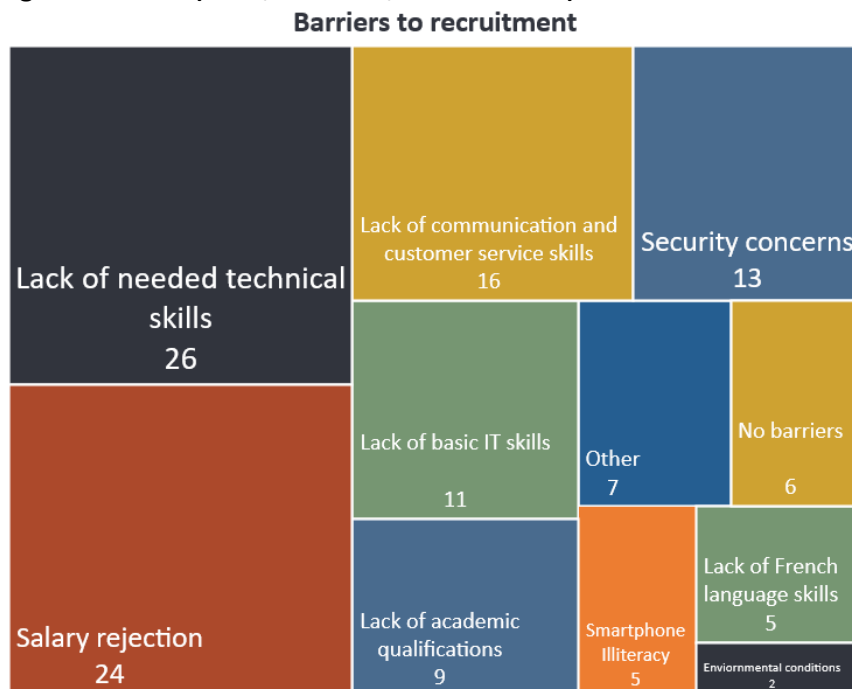


Figure 33. Skills (basic, technical, and soft skills) are most common hiring challenges



Businesses cited regional expansion, diversification, and personnel turnover as most common motivations for hiring. However, barriers to recruitment (primarily skill-related as shown in Figure 33) as well as barriers to business growth, prevent most businesses from hiring. The most commonly cited barriers to business growth included: Access to finance (43%), government corruption (43%), taxation (39%), poor infrastructure (25%).

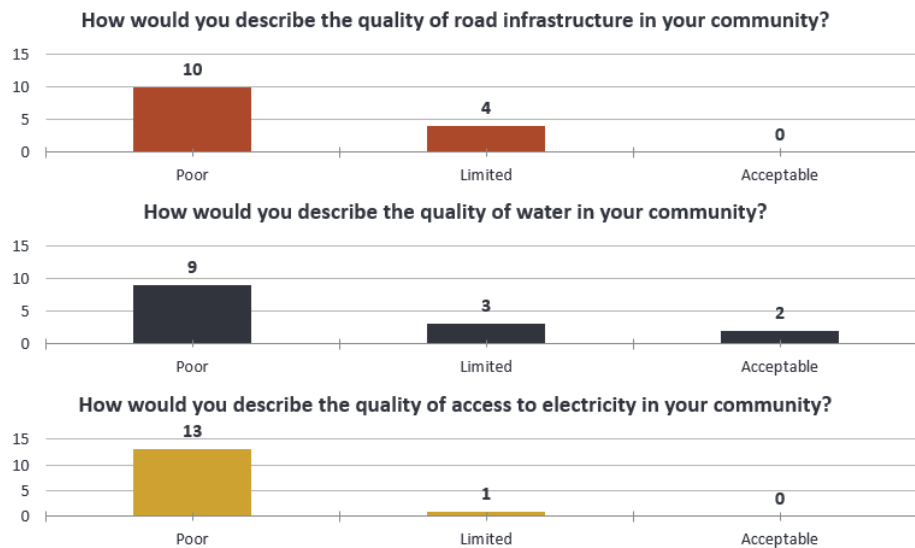
¹²⁰ EDC “Youth opportunities assessment - North Kivu and South Kivu,” USAID, (forthcoming).

Infrastructure constraints

For rural communities in particular (where many of these businesses have no presence) the infrastructure challenges are acute. In nearly every community, roads are not accessible for supplies, there is virtually no access to electricity and the need for clean water is intense.

The research team spoke with community leaders in each of the places visited. Every single one brought up infrastructure as a major barrier for economic development. Road infrastructure and access to electricity were not considered acceptable in any of the communities, while access to water was only mentioned as acceptable in Ngungu and Kibabi.

Figure 34. Community leaders in every community highlighted infrastructure as an economic barrier



Addressing infrastructure issues in more rural communities could potentially be an area where engaging private sector actors including cooperatives and *comptoirs* might be effective, if it is framed as a win-win situation. An example of the private sectors' willingness to invest in local infrastructure is exemplified by a number of projects carried out by Cooperama in and around Rubaya under the leadership of its president Robert Seninga. These have included financing the construction of the three most well-developed neighborhoods in Rubaya, a health center, and as well as regular investments in road repair and maintenance. In 2014, Cooperama built a hydropower plant to supply electricity to the town, however this largely failed due to heavy taxation on power by the government.¹²¹

¹²¹ Karen Büscher. "Urbanisation and the Political Geographies of Violent Struggle for Power and Control: Mining Boomtowns in Eastern Congo," *Revue internationale de politique de développement*, October 2018. <https://journals.openedition.org/poldev/2769>

COVID-19

The COVID-19 outbreak was just beginning to spread beyond Asia at the time data collection was conducted for this report, and its consequences thus are not reflected in the data. However, given the global economic and public health consequences of the pandemic to date, including in DRC, it is worth reviewing the potential impacts on the communities visited for this assessment.

While cities such as Goma and Bukavu have undergone at least a partial quarantine, as have most other large cities globally, poverty means that for many going to work is not optional. In the rural areas, quarantine is even less strictly enforced. However, the economic impact of the pandemic is hitting the region hard, including the most rural artisanal mining sites. Even in the best of times, the incomes of artisanal miners are in constant flux based on international mineral prices, and COVID-19 has major implications for both short term and long-term price trends for gold and 3Ts. Generally, private companies, cooperatives, and artisanal miners are likely to be negatively impacted by the COVID-19 crisis, since end-user sectors like electronics and automotive industries – which rely heavily on 3T minerals – have reduced their operations and seen a decline in consumer demand.¹²² Gold prices, on the other hand, have skyrocketed at the international level, rising from just over \$1,400/ounce to around \$1,700/ounce - leading Bank of America to revise their 18 month outlook on gold from \$2,000 to \$3,000.¹²³

However, high international gold prices are not enough to save artisanal miners, at least over the short term. Closed borders, stagnant trade, and the loss of liquidity among local gold buyers has caused local gold prices to drop by as much as 50%.¹²⁴ Major destination for artisanal gold, such as the gold souk in Dubai and Zaveri Bazaar in Mumbai have been temporarily closed due to the pandemic, while three Swiss refiners (Valcambi, PAMP and Argor Heraeus) which source solely from artisanal gold have temporarily ceased operations.¹²⁵ While information is not yet available specifically for the Kivus, 79 of the 85 gold *comptoirs* in neighboring Ituri province have been shut down due to lack of buyers.¹²⁶ The devastating consequences this will have on artisanal communities is enormous in the short run, potentially leading to complete loss of livelihoods for many miners in these communities. Over the long run, local prices should stabilize, however the implications of COVID-19 on these communities in the long run is yet to be seen, potentially affecting prices of food and consumer goods. A case study of possible consequences is the 2010 temporary ban on artisanal mining caused by the passage of Dodd-

¹²² Roskill. "Tantalum, tungsten: Coronavirus weighs down market sentiment," February 28, 2020.

<https://roskill.com/news/tantalum-tungsten-coronavirus-weighs-down-market-sentiment/>

¹²³ Business Standard. "Gold can hit \$3,000/oz as investors become risk-averse: BofA Securities," April 22, 2020.

https://www.business-standard.com/article/markets/gold-can-hit-3-000-oz-as-investors-become-risk-averse-bofa-securities-120042200457_1.html

¹²⁴ Artisanal Gold Council. "Impacts of COVID-19 on ASGM communities – updated April 23," Last updated April 23, 2020. <https://www.artisanalgold.org/2020/03/possible-impacts-of-covid-19-on-asgm-communities/#Field>

¹²⁵ Adam Rolfe. "ASM, RESPONSIBLE SOURCING AND COVID-19 – AN INITIAL ANALYSIS," April 2, 2020.

<https://www.levinsources.com/knowledge-centre/insights/asm-responsible-sourcing-covid-19>

¹²⁶ Engineering News. "DRC artisanal miners face uncertain future as Covid-19 disrupts market," April 22, 2020.

<https://www.engineeringnews.co.za/article/drc-artisanal-miners-face-uncertain-future-as-covid-19-disrupts-market-2020-04-22>

Frank.¹²⁷ At that time, provinces of DRC that heavily relied on artisanal mining (including the Kivus) saw increased incidence of battles (44%), looting (51%) and violence against civilians (28%) compared to pre-Dodd Frank averages, as well increasing hunger and poverty.¹²⁸

Conclusions

Child labour in mineral supply chain in Eastern Congo is best viewed as a symptom of the larger structural problems caused by decades of conflict. A core problem is the lack of economic opportunity. Child labour is a symptom of this, not because miners are actively trying to exploit children, but due to the context and the apparent lack of alternatives - education or safer employment. Solutions should not merely address the symptom. A systemic – and systematic – approach is needed to leverage forces for change and enable economic opportunities.

In the mining communities visited in Masisi territory in North Kivu province and near Nzibira in South Kivu province, children working in the mines is a common occurrence, despite bans on child labour that are enforced with varying levels of strictness. Children most often work in the mines as washers, sorters, transporters and even sometimes as diggers or small traders. When child labour is banned, it is known that children still enter at night, to salvage through rubble to find ore to sell and make some money. Although education is theoretically free, this varies in practice from village to village and many families still cannot afford to pay. Children are thus forced to find ways of making money to support their families.

Many of the children in the mines are orphans, or have been abandoned, or have family members who are disabled or sick or for some other reason cannot support them. School is generally not an option and lack of land ownership by most families means the mines are the only option for survival. Nearly everyone interviewed agreed children's best place was in school, however it is widely acknowledged that this simply isn't possible for many children. More often than not, when children are allowed by adults to work in the mines, it is because they are taking pity on them and there is a perceived assumption that giving them some work in the mines enables the children to survive, since there is no viable alternative for the child. Health and safety are challenges at all the mines; death is common occurrence due to landslides and tunnel collapse and diseases such as malaria and tuberculosis are prevalent. At the end of the day child labor is an economic decision made by a child (or less commonly his/her parents) based on analysis of costs and benefits of various alternatives (or lack of other viable

¹²⁷ Section 1502 of the 2010 Dodd-Frank Act, passed by the US in the wake of the financial crisis, instituted disclosure requirement for financial institutions to determine through supply-chain due diligence if their products contain conflict minerals (primarily from DRC and other African countries).

Mvemba Phezo Dizolele. "Dodd-Frank 1502 and the Congo Crisis," CSIS, August 22, 2017.
<https://www.csis.org/analysis/dodd-frank-1502-and-congo-crisis>

¹²⁸ Nik Stoop, Marijke Verpoorten, and Peter Van der Windt. "More Legislation, More Violence? The Impact of Dodd-Frank in the Democratic Republic of the Congo," *PLOSOne*, vol 13, no. 8, August 89, 2018.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0201783>
Sundarsan Raghavan. "How a well-intentioned U.S. law left Congolese miners jobless," *Washington Post*, November 30, 2014. https://www.washingtonpost.com/world/africa/how-a-well-intentioned-us-law-left-congolese-miners-jobless/2014/11/30/14b5924e-69d3-11e4-9fb4-a622dae742a2_story.html

alternatives). In many rural communities in the Kivus, working in the mines is the choice that makes the most sense economically, despite hazards and overall undesirability of the roles in the mines.

Employment (other than self-employment) outside of the mines is scarce to non-existent in most mining communities, aside from Rubaya and Nzibira, and most opportunities derive from entrepreneurship or self-employment in small-scale commerce or transport, or as day laborers in someone's fields on a seasonal basis. Even most miners have multiple sources of income. Agriculture is an option for those who have land, but most do not have enough to grow crops as a major source of income. Land is especially hard to come by for families who are not originally from these communities, who were either displaced by conflict or arrived in search of better opportunities.

Recommendations

These recommendations aim to address child labour in a systemic way by identifying points of leverage along the mineral supply chain and in communities where interventions can maximize impact to change behaviors and enable economic growth opportunities. Some interventions should be focused on larger towns which function as selling points for minerals (e.g. Rubaya and Nzibira) where private sector and civil society engagement can facilitate resource pooling and collective action, while others can be effectively implemented in even the smaller and more rural communities.

The mineral supply chain is governed by a persistent market equilibrium that has evolved over decades of conflict and ethnic tensions. Many actors draw resources from the supply chain in more and less formal ways, creating a complex web of interests and channels of economic dependence. Because of this, action must be taken at multiple points throughout the system if lasting change is to occur. If not addressed carefully and in ways that are win-win for all involved, there is the potential for interventions to be rendered ineffectual by any one of many actors along the supply chain, or even to cause harm. In every intervention, local norms should be considered, and the focus should be on the effectiveness and sustainability of the intervention beyond the length of the PACE project. We recommend interventions geared not only to children and their families themselves, but to the communities as a whole.

Table 10 below shows the potential opportunities and recommendations for each target population. For younger children, the focus is to incentivize school attendance, with the desired end state being that children prefer to go to school than to work in the mines. As was discovered in our focus group discussions with children, going to school can be cost-prohibitive and even when children can afford to go at least occasionally, they often fear going because of the harsh punishments and beatings carried out by teachers as discipline for even the smallest transgressions. For this reason, recommendations for younger children are focused on addressing these root causes to get children back to school. This includes accelerated education programs to reintegrate with children who have dropped out, school lunch programs to incentivize children to attend school, and trainings for teachers on positive ways of interacting with and disciplining their students. To successfully address some of these challenges, action must also be taken at the community level. This has informed the recommendations below on supporting schools, licensing finding sustainable methods of financing school fees (where not covered by government) and increase school capacity and resources.

For older children and parents, the desired end state is to help them transition to safe alternative forms of generating enough income on which to live. For this to work, income levels from new activities should at least come close to those what is currently being earned in the mining sector. This is possible, especially for those who can engage in providing services or products for sale. The collapse in local mineral prices caused by COVID-19 provides a unique opportunity to encourage transition away from mining towards other income-generating activities. We recommend vocational training and entrepreneurship programs for older girls and boys, and women and men in these communities. Based on our labor market findings, we have selected 8 technical tracks which show the most promise, from among the many opportunities identified. Training can include general technical and soft skills that are crosscutting, as well as specialized technical skills for each of the opportunity areas. Financial literacy skills are important to include, as we found that concepts that might be taken for granted in better off societies, like savings, are often completely unknown, especially among younger people working in the mines. From what we heard in our interviews and focus groups, artisanal miners may spend all of their earnings in one day without thinking of saving for the future or investing in ways that can help them increase their income in the future. We also recommend basic entrepreneurship training, as well as mentorship and support (including start-up finance) over at least a one-year period, for participants to successfully begin sustainable income-generating activities to supplement or replace current activities. Training should be gender integrated.

At the community level, activities should remove barriers to economic development so that local economic initiatives can succeed, including mobilizing financial and other resources necessary for community members to start new endeavors. At the core of community-level action, should be the engagement with private sector and civil society actors to come to solutions for the key barriers to economic development in each community. Using this assessment and the community maps in the annex to identify the key actors in local communities and the supply chain, as well as potential linkages with Congolese diaspora, can be a first step in forming coalitions to reinvest in these mining communities. Building on similar efforts by mining cooperatives like Cooperama and savings and loans cooperatives (AVEC), PACE should facilitate conversations that emphasize the win-win aspects of pooling resources together to address community problems. Starting in Rubaya and Nzibira, we recommend the convening of key local actors, such as local chiefs, cooperatives, and transporters (and potentially of *comptoirs* and *unités de traitement* in the cities that have local interests) to address community challenges. Emphasis should be placed on the fact that building up value chains adjacent to the mineral supply chain (such as transport, agriculture, commerce) and investing in infrastructure is important for these mining communities to thrive and be more productive. Win-win solutions should be the focus, with a goal of moving past the rent-seeking mindset common throughout the supply chain. Private sector investment in communities can be potentially matched by project financing, especially for key infrastructure such as schools and wells for clean water. Opaqueness of the rules regarding who is allowed to work in the mines, and who can buy and sell minerals, create opportunities for corruption and overcharging by civil servants. Because rules and requirements are unclear, many artisanal miners prefer to work unlicensed, often paying bribes in excess of the legal fees. The irony is that despite high levels of taxation in the mining sector, very little of it actually reaches the government, contributing in turn to a cycle of extortion. For this reason, we also recommend a pilot intervention to create a platform for artisanal miners to register and pay for their *carte de creuseur* via mobile phone. This platform will include online information, transaction, and payment. If successful, the platform can be expanded to

cover other transactions throughout the mineral supply chain to increase transparency and reduce transaction costs.

Table 10. Recommendations for PACE programming

Target group	Potential opportunities	Intervention
Children (under 15)	Education	<p>1) Accelerated education programs</p> <ul style="list-style-type: none"> - Remedial courses to help children who have previously dropped out of school to catch up and be reintegrated into school programs. - Programs should include basic vocational training to build skills that are useful for alternative forms of income generation: i.e., basic sewing and carpentry skills. <p>Impact: Get children out of the mines and back in school.</p> <p>2) Expand school lunch programs</p> <ul style="list-style-type: none"> - Work with teachers and local community leaders to provide school lunches. -Potentially expand on PACE’s school garden pilot project. <p>Impact: Provide children with food, removing one motivation for working in the mines.</p> <p>3) Train teachers</p> <ul style="list-style-type: none"> - Provide training for teachers on positive ways of interacting with and disciplining their students (along the lines of the current positive parenting training). <p>Impact: Reduce violence and abuse in schools, making education more appealing for children.</p>
Girls and Boys (15-17) and Women and Men (18+)	<p>Key entrepreneurship opportunities</p> <ul style="list-style-type: none"> • Agriculture • Construction • Hairdresser • Leatherwork • Machinist • Mechanic • Sewing/tailoring • Transportation 	<p>Vocational training programs</p> <p>1) Basic skills/soft skills</p> <ul style="list-style-type: none"> - Personal finance training. - Soft skills: focus on customer service and communications skills. - Basic numeracy. <p>2) Technical skills tracks</p> <ul style="list-style-type: none"> - Agriculture: Knowledge of farming practices, plowing, post-harvest treatment (husking, drying, sorting), processing (packaging, labeling), value-added products (e.g. maize and cassava flour, cheese and yoghurt production). - Construction: Carpentry, masonry, stonework. -- Hairdresser: Haircutting, hairstyling, braiding.

		<ul style="list-style-type: none"> - Leatherwork: Leather making (curing, fleshing, tanning) and production of leather items (belts, bags, shoes). There are many skilled shoemakers in Goma who might be recruited for training purposes. - Machinist: Machine operation and maintenance (oxygen machines and water pumps for mining sites). - Mechanic: Car and motorcycle repair and maintenance. - Sewing/Tailoring: Cutting, tailoring, sewing, embroidery, patching. - Transport: Motorcycle driving, car/truck driving. <p>3) Mentorship and support</p> <ul style="list-style-type: none"> - Entrepreneurship training. - Provide mentorship and guidance through the first year of each participant’s new business. - Provide start-up financing for older children and parents to start their own businesses (e.g. to purchase oxygen machines, water pumps, motorbikes and other assets needed for alternative income generating activities). <p>Impact: Youth and adults have alternative sources of income with which they can support their families outside the mines.</p>
<p>Private sector and community coalitions</p>	<p>Mobilize resources to sustainably address key challenges in the community.</p>	<p>1) Support schools</p> <ul style="list-style-type: none"> - Explore ways to cover school fees where government funding is not available. - Increase school capacity by providing new classrooms and educational materials. - Potential for mining supply chain actors to support schools in communities where they are active. <p>Impact: Remove a key barrier which children face in attending school, and providing a safe alternative to working in the mines.</p> <p>2) Infrastructure</p> <ul style="list-style-type: none"> - Pool resources to address local infrastructure issues, including repair and maintenance of roads and development of renewable energy sources. - Dig wells to provide clean water (this can be done even in the most rural villages, where there is great need). <p>Impact: Reducing transaction costs caused by poor infrastructure and lack of access to electricity and water is a win-win for the communities and the mineral supply chain actors who profit from increased production and quicker transportation.</p>

		<p>3) Finance</p> <ul style="list-style-type: none"> - Work with AVEC groups and other local actors to set up savings and loans groups in intervention communities <p>Impact: This will help fill the financing gap that exists in many communities, including helping finance new businesses and purchase of equipment for artisanal miners.</p> <p>4) Agriculture</p> <ul style="list-style-type: none"> - Work with farmers and input suppliers to improve organization of input markets and facilitate financing and/or group buying arrangements for agricultural inputs (such as improved seed). - Explore partnerships with local agricultural cooperatives around Nzibira and Rubaya, to provide farmers with additional support and training and encourage increased use of improved inputs. <p>Impact: Increased agricultural productivity improves viability of agricultural livelihoods and improves prospects of moving past subsistence farming for those with smaller plots of land.</p> <ul style="list-style-type: none"> - Relevant donor projects which could be potential partners for this activity USAID’s Feed the Future Strengthening Value Chains Activity, USAID’s South Kivu Food Security Project, USAID’s North Kivu Agriculture Sector Support Project, and Plant with Purpose’s Restoring Land and Lives in Rural Communities in South Kivu project. <p>5) Transparency</p> <ul style="list-style-type: none"> - Create a pilot platform for artisanal miners to register and pay for their <i>carte de creuseur</i> via mobile phone. This platform will include online information, transaction, and payment. We propose following a bottom up approach led by key civil society and private sector actors to develop the pilot and get high level government support. - If successful, this platform could be expanded to include <i>carte de négociant</i> and other transaction required throughout eth mineral supply chain.
--	--	---

Given the delicate equilibrium dominating the mineral supply chain and the Kivus as a whole, a systems approach is required for effective change. The recommendations outlined above are ambitious because they intervene at multiple points throughout the ecosystem, but can be effective for the same reason.

To reduce the worst forms of child labour in the mining communities in Masisi and around Nzibira, these communities must develop economically. For this to happen, change is needed not only in the mineral supply chain but in the adjacent supply chains (agriculture, commerce, transport) as well. Older children and adults need strategies to “hedge their bets,” so that they can generate livelihoods from either or both types of activities (mining and non-mining). Skill development and support to enterprise activity will be most successful if it can be provided in conjunction with interventions to improve infrastructure, remove structural barriers to education and growth, and harness the potential of the private sector as a force for good in these communities. Priority steps towards implementing these recommendations should include the following:

- Decision on pilot locations. Rubaya and Nzibira could be logical locations to start as the central mineral supply chain hubs in their respective territories.
- Identification of key actors, using the community profiles and this assessment as guides, to mobilize for participation in private sector and community coalitions. This should include key local actors - such as local chiefs, cooperatives, and transporters - *comptoirs* and *unités de traitement* in the cities that have local interests, mineral concession owners, relevant government officials, and members of the Congolese diaspora who may have interest in investing in these communities.
- Convening of coalitions to address issues related to infrastructure, finance, transparency, and other barriers to growth in these communities.
- Development of vocational training curriculum and tracks.
- Hiring and training of staff for vocational centers.
- Launch of entrepreneurship and vocational training center for older children and adults.

Annexes

[Annex 1. Community Profiles](#)

[Annex 2. Participants in study](#)

[Annex 3. Tools](#)

[Annex 4. Compiled data](#)

[Annex 5. Organizations active in the mineral supply chain](#)