

Research Article

Does Artisanal Mining Increase the Risk of Sexual Violence?

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ABSTRACT

DR Congo's natural resource abundance has featured in policy debates and amongst advocacy groups as the prime example of 'conflict minerals' driving conflict-related sexual violence. Yet, systematic analyses of the links between mining, conflict, and sexual violence are scarce. This article explores this link combining new subnational data on the geographical location of ASM sites with detailed micro-level data on exposure to sexual violence from the 2013/2014 Demographic and Health Survey in DRC. We find that women living close to ASM sites are indeed more likely to experience sexual violence. In the Kivus and Maniema, the risk of experiencing sexual violence is particularly high for women that live close to a mine with the presence of one or more armed actors.

Keywords: Armed conflict, ASM, DRC, Democratic Republic of the Congo; sexual violence, mineral mining.

Introduction[1a]

The situation in the war-torn eastern parts of The Democratic Republic of Congo (DRC) has been volatile for decades, and the most recent conflict has been referred to as 'Africa's World War'. Furthermore, Eastern DRC is often portrayed as the 'rape capital of the world' within the advocacy narratives, where violence is driven by 'conflict minerals' serving to fuel the activities of various armed actors.1,2 Most observers have portrayed the armed actors as focused on capturing 'the benefits from the vast Congolese mineral resources rather than at the achievement of long-term political aims', and sexual violence against women and girls has been portrayed as the main consequence.3 For example, in 2001, Suliman Baldo at Human Rights Watch stated that 'there is a direct link between human rights abuses and the exploitation of resources in areas in the DRC occupied by Rwanda and Uganda'. [2a] In the report entitled Sexual Violence in Conflict, the UN Secretary-General also points out that in some countries there is a correlation between spikes in incidents of sexual violence and military activity linked to the illegal extraction of natural resources, and Eastern DRC is presented as the prime example of rape being used by armed actors to punish civilians for preventing poaching and mineral trafficking.4

Although practitioners and policy-makers in particular have argued that there is a relationship between artisanal and small scale mining (ASM) and sexual violence in the DRC, the specification of potential mechanisms that could link ASM and sexual violence is limited, and some scholars criticize the advocacy narrative of the situation in Eastern DRC (e.g. Autesserre 2012). Yet, few, if any, systematic analyses have focused on testing this particular relationship statistically.2,5 Furthermore, we still know very little about how and why armed conflict and conflict-related sexual violence perpetuate different forms of violence in post-conflict settings. This knowledge gap in the literature motivates our research question addressed here: To what extent and how is a woman's risk of experiencing sexual violence influenced by the presence of artisanal and small scale mining (ASM)?

Theorizing mining and sexual violence

A relationship between 'conflict minerals' (resulting from ASM) and sexual violence has predominantly been proposed in policy and advocacy circles, but also in parts of the academic literature on Eastern DRC.1,4,6 Our first overarching hypothesis simply reflects this proposition:

H1: Women living in close proximity to mines are more likely to experience sexual violence.

While several reports and policy agents strongly suggest that there is a link between natural resource extraction and sexual violence, the link is often poorly explained. Two main mechanisms that link ASM and heighted risk for sexual violence can be identified through the existing academic literature on sexual violence and natural resources, as well as anecdotal evidence from policy makers and practitioners: the financing of armed actors and the hyper-masculine mining culture. These constitute the basis for the subsequent hypotheses. First, sexual violence has been argued to be used strategically by armed actors to terrorize and drive out the settled population in order to control mines and gain access to valuable resources. This makes women living in mineral-rich regions particularly vulnerable to sexual violence by armed actors. Second, due to what has been portrayed as a 'hyper-masculine' and inherently violent mining

[1a] This review is based on an article by.[10] See the longer article for a more elaborate literature review and theoretical discussion.

[2a] See http://www.globalissues.org/article/442/guns-money-and-cell-phones.

culture, women in or near mining sites may be more exposed to various forms of sexual abuse, or enter into transactional sex of various kinds.

The curse of the 'honey pot'?

Sexual violence as a tactic for forced population displacement has been argued to be used by armed actors, in part for controlling or getting access to resource rich areas. Mines can be attractive not only for military, rebels and militia, but also for police, various public agents and business interests who might use various tactics for controlling the land and gaining access to riches.

Hence, a mechanism linking natural resources to sexual violence is that sexual violence may to a larger extent occur in areas where conflict and lawlessness are being sustained by various armed actors exploiting the resources for economic gain. When armed actors control ASM sites, there could be a particularly heightened risk of sexual violence against women in the area. This leads to our second hypothesis.

H2: The closer a woman lives to ASM controlled by an armed actor, the more likely she is to experience sexual violence.

The curse of the mining culture?

The mining industry is often portrayed as being inherently violent and the mining zones as particularly hostile environment for women.5 Specifically, the mining culture has been presented as 'hyper-masculine', producing masculinities akin to those that emerge through initiation rituals into gangs, counter-cultures of marginalized youth, and other fringe cultures.7The hyper-masculine sub-cultures or 'fringe cultures' associated with ASM sites have been found to pride themselves on delinquent behavior and rejecting the norms and regulations of society, including scandalizing existing sexual norms and piousness. Such masculine cultures could encourage more violence against women, particularly sexual violence.7

The above-mentioned findings that there are subcultures of hyper-masculinity associated with mining means that through working in ASM and walking to and from work associated with the mining industry, women could be more at risk of falling victim to sexual violence from men outside their household. Many women working in the mining sector are also recruited to the sex industry and the exchange of sex for money is very prevalent in artisanal mining towns in Eastern DRC. Women who are involved in transactional sex are also more at risk of rape and other forms of sexual violence. Hence, the third hypothesis states that:

H3: Women who live close to ASM sites and work outside the home are more likely to experience sexual violence.

Data and research design

To test these hypotheses, we spatially link detailed data on the location of ASM sites in Eastern DRC with georeferenced data for women aged 15-49 on sexual violence exposure, from the DRC Demographic and Health Survey (DHS) conducted in 2013-2014. [3a] The women respondents were surveyed on their experiences with sexual violence by both their intimate partners and others. Here we focus on the latter type, which constitute dependent variable: sexual violence committed by non-partners. [4a] The DHS data represent 172 randomly sampled clusters in Eastern DRC, covering a maximum of 2,134 respondents. The geographic distribution of DHS respondents is shown in Map 1.

The data on ASM is collected by the International Peace Information Service (IPIS). [5a] The data includes geographical data on 1,139 artisanal and small scale mines in five districts in Eastern DRC: South Kivu, North Kivu, Maniema, Katanga, and Oriental (only Ituri region).

In order to test H1, we used Geographical Information System tools to measures how close the woman lives to any ASM site (Distance to ASM) measured in degrees. To test H2, we measure how close the woman lives to the nearest mining site controlled by an armed actor (Distance to ASM with presence of armed actor). Further, we generate a dummy variable from DHS indicating whether the woman reports to work outside the home (1) or not (0) (Works outside home). This variable is then interacted with the distance to mining variable, Distance to ASM, to account for whether the combination of working outside the home and residing near ASM sites increases a woman's risk of sexual violence, as proposed in H3.

In addition we control for conflict intensity and history using a measure of the log-transformed number of battle deaths within a 10km radius of the respondent, using the UCDP Georeferenced Events Dataset (GED) [8]. Further, we include the respondent's age, education, the husband's alcohol, household level of wealth and for urban or rural residence as well as regional dummies.

Results

In Table 1, Model 1, we test our first hypothesis, that women living in close proximity to mines are more likely to experience sexual violence. Distance to a mine is negative and significant, thus a woman is systematically more likely to experience both sexual violence by non-partner the closer she lives to an ASM site, which supports H1. Keeping all controls at their median values in Model 1, a woman who lives closer to a mine (10th percentile) has 5 percent points higher risk of experiencing sexual violence by a non-partner than a woman who lives fur-

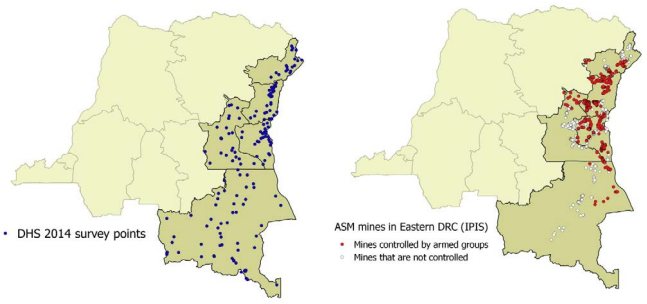

Figure 1: Locations of DHS survey cluster points (blue) to the left, and locations of ASM mines (red/white) to the right in Eastern Democratic Republic of Congo.

[3a] See www.measuredhs.com.

[4a] See [10] for a comparable analysis on the effect of ASM on inter-partner sexual violence.

[5a] http://www.ipisresearch.be/mapping.php.

Table 1: ASM, armed actors, and individual risk of experiencing sexual violence, Eastern DRC, 2014.

	Model 1	Model 2	Model 3 Kivus and Maniema	Model 3
Distance to ASM	-0.392**			-0.796**
	(0.153)			(0.379)
Distance to ASM with presence of armed actor		-0.104	-1.325***	
		(0.118)	(0.427)	
Works outside home	0.233	0.240	0.0127	0.041
	(0.200)	(0.203)	(0.244)	(0.237)
Works outside home * distance to mine				0.476
				(0.370)
Constant	-2.036***	-2.179***	-1.891***	-1.869***
	(0.370)	(0.409)	(0.538)	(0.400)
N	2,009	2,009	1,074	2,009

Logit regression coefficients (standard errors in parentheses), * $p<0.1$; ** $p<0.05$; *** $p<0.01$.
Control variables are not reported here, but can be found in the appendix

ther away from a mine (90th percentile). This means, a location close to a mine with say 10,000 women will see 500 additional women being victims of sexual violence compared to a location further away from ASM activities.

Model 2 tests Hypothesis 2, where we see that the coefficient for the variable Distance to ASM with presence of armed actor is negative, indicating that the further away the respondent lives to an armed actor controlled mine, the less likely she is to experience sexual violence. However, the effect is not statistically significant. A reason for this insignificant finding could be that as the distance to the nearest ASM site with armed actor presence increases, it makes little sense to expect a heightened risk, particularly due to the lack of good roads and infrastructure for travel across distances in Eastern DRC. Hypothesis 2 can therefore be particularly relevant in the nearest areas with armed conflict. As map 3 shows, the two Kivus and Maniema provinces have had high levels of conflict. Therefore, we also run the analysis on a subsample of only the respondents living in these areas (Model 3). Here, we find a highly significant relationship between living closer to ASM sites with presence of armed actors and sexual violence by other than partner. The substantial effect is quite strong. Comparing those living the furthest away from the mine (90th percentile) to those that live the closest (10th percentile) the risk of experiencing SV by a non-partner is almost three times as high.

In Model 4, testing hypothesis 3, we find no significant effect for the interaction between living close to ASM and working outside the home. One reason could be that the measure working outside the home is too crude to proxy whether the woman actually works in the ASM sector. Another possible interpretation is that a woman in Eastern DRC is not necessarily any safer from sexual violence in her home than outside. Many stories of women being attacked by armed actors in their homes is testament to this.9 With access to better measures of women's income-generating activities and types of work, future studies might be able to conduct more nuanced tests of the exposure risk depending on whether and how a woman is engaged in work outside the home.

We have also run the same tests using a dependent variable measuring sexual violence by partner. We get similar results for Model 1, that the closer to a mine a women lives the more likely she is to experience sexual violence by partner. However, for this dependent variable we do not find that this risk increases when the woman lives closer to a mine that is controlled by an armed group, like we do in Model 3. The results can be found in the appendix.

Further, we also ran the same tests using DHS data from 2007. Here we do not find any significant results for the sexual violence by non-partner. This could suggest that sexual violence has become an increasing problem in the mining areas in Eastern DRC. On the other hand, this can also be a result of an increasing focus on the issues, and thus making it easier for women to report that they have been exposed to sexual violence. Results can be found in the appendix

Conclusion

The dominant narrative among policy makers and advocacy groups suggests that there is a strong link between natural resource extraction and sexual violence in Eastern DRC. In an attempt to systematically test the relationship between mining and sexual violence, this article presents a quantitative analysis of whether living close to an ASM site increases a woman's risk of experiencing sexual violence.

The findings indicate that in Eastern DRC, women living close to ASM are more likely to be sexually victimized by both partners and non-partners. At particular risk of sexual violence by someone other than their partner are women in North and South Kivu and Maniema who live close to ASM sites with armed actor presence. Women who report working outside the home are not more subject to sexual violence; nor is this relationship contingent on distance from mining areas. Finally, in South-and North-Kivu and Maniema, our analyses show that women who live closer to ASM sites with the presence of one or more armed groups have a higher risk of experiencing sexual violence by non-partners. Their risk of being abused by their own partners, however, is not affected by living closer to ASM with armed-group presence.

Given this additional statistical evidence presented herein, the need for establishing stronger measures and regulations that counteract the heightened risk of sexual and gender-based violence in mining areas is further substantiated. It also calls for increased assistance to women who have been victimized and who might face severe health problems as a result of sexual abuse.

However, although mining sites might be sites of great risks for women, they can also contribute to relative economic empowerment. Policy measures need to be continuously sensitive to the fact that ASM constitutes an important livelihood strategy for local women and gives access to various income-generating activities related to the mining industry. Any attempt to prevent violence against women in and near mining sites therefore has to design interventions that can strengthen women´s livelihood and economic empowerment.

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