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# Do Cooperatives Improve Female Miners' Outcomes? A Case Study of Rwanda

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**ABSTRACT** Many African countries have encouraged the creation of local cooperatives in their efforts to legalize artisanal and small-scale mining. This exploratory case study of Rwanda's largest mining cooperative examines how cooperative business models, rather than direct company employment, might mitigate women's vulnerabilities in extractive industries. Through feminist political ecology's intersectionality framework, this research asks how cooperatives might improve women's outcomes along three lines—financial gains, gender violence reduction, and legal awareness and empowerment. Qualitative inquiry directly draws from semi-structured interviews, focus-group discussions, and participant observations, and indirectly from mapmaking workshops, with women who are full-time employees, seasonal miners, and farmers near six extraction sites. Based on content analysis in NVivo, this study finds the selected cooperative does not improve women's financial outcomes or lower violence rates compared to private companies in Rwanda. A specific form of gender violence, coerced transactional employment sex, is higher in the cooperative. However, cooperative work may expand women's rights conceptions and legal consciousness. Cooperative members demonstrated a greater understanding of supply chains, government functions, and conflict resolution pathways. These results indicate that cooperatives are not a panacea for rural women's marginalization but are a starting point for enhanced understandings of socio-economic and legal equities.

**KEYWORDS:** Mining cooperatives; gender violence; legal consciousness; intersectionality; content analysis; Africa

## 1. Introduction

A decade ago, Rwanda saw a substantial rise in tin, tantalum, and tungsten (3T) exports to fulfill the global demand for electronics. The mining sector quickly became Rwanda's second-largest gross domestic product (GDP) earner, growing around 10% every year since 2006 and eclipsing agriculture for national revenue (World Bank, 2019). Mineral earnings aim to reach \$1.5 billion by 2024, nearly doubling annually (Butera, 2018; Government of Rwanda, 2017, p. 22). These official numbers are in addition to the profit minerals generate off the books, which the state seeks to legalize and bring into official measurements (Perks, 2013). Although not with wholly steady progress, this state regulation of mining is an ongoing effort in which the government closes some artisanal and small-scale mines (ASMs) and helps others transform to join the ranks of the 500 legalized, formalized, and larger-scale operations that now dot the country's hilly terrain.<sup>1</sup> The state views formal cooperatives as a way to channel mining profits

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toward measurable GDP growth and socio-economic development in local communities—to potentially make it a minerals success story rather than a casualty of the resource curse, or the phenomenon in which natural resources may impede socio-economic development in the Global South under certain conditions.

A cooperative is an autonomous business organization democratically owned by its voluntary members, its decision-makers and customers. Regardless of their income or identity, each member is supposed to have one vote in collective decisions to meet the group's everyday financial, social, and cultural needs (Novkovic, 2008). Cooperatives can be seen as bulwarks of job creation, sources of socio-economic protection after financial shocks, and organizational structures for employee empowerment. They offer collective access to prices and markets, endowments, credit, and solidarity. Scholars have found that African cooperatives may lower unemployment and poverty rates, mitigate transaction costs for producers in the farm-to-market supply chain, and provide social services like insurance and loans in states with weak official state capacity (Develtere, Pollet, & Wanyama, 2008; Ortmann & King, 2007; Pollet, 2009). Rothschild (2009) argues that cooperatives could create democracy at work that translates into empowered political spaces outside. Others find them compatible with traditional African cultural values of mutuality, reciprocity, and solidarity (Wanyama, 2009, p. 12). The World Bank advocates they benefit economies of scale, link small-scale and national economies, foster rural competition and stability, and assist in capacity-building; saying they are an 'effective means of channeling assistance to women' through credit and savings associations, marketing, and business management (Huppi & Feder, 1990; Hussi, Murphy, Lindberg, & Brenneman, 1993, pp. 4–5). Consequently, as 'invisible giants of the global economy,' cooperatives are enjoying a development renaissance in Africa because they are seen as a helpful approach to remedy underdevelopment (Pussa, 2021). These global arguments in favor of cooperatives are also espoused within Rwanda, where women are employed to some degree by most rural cooperatives, including in 3 T mineral extraction.

However, cooperatives have their detractors. They may be viewed as vestiges of colonial rule since colonial governments introduced cooperatives in Africa to improve agricultural yields and operated under close state control after independence (Hussi et al., 1993; Kwakyewah, 2016). Rural cooperatives have been abused for political purposes in several countries. Cooperatives demonstrated an inability to adapt to changing needs for political advocacy on their behalf in Ethiopia, mandated membership in socialist Tanzania, and received overly-extensive financial support from the state in Burkina Faso (Develtere, Pollet, & Wanyama, 2008). In Senegal, even women-majority cooperatives have been used by men to augment their political power and profits when they entered vote-exchange arrangements with female cooperative leaders seeking government funding (Kwakyewah, 2016). Along with many NGOs and aid agencies, the Rwandan government's advocacy of mining cooperatives as a promising path forward for inclusive socio-economic development *assumes* horizontal and decentralized business models spread benefits to all members, including women and men, equally.

When the interests of cooperative members conflict with the interests of the state, rarely do members come out on top, particularly when those members are women. For example, when the Democratic Republic of the Congo (DRC) government forced miners in Eastern regions to organize themselves, the cooperatives' elites ossified worker exploitation through traditional power structures, and Congolese 'big men' dominated the cooperative agenda to their benefit (De Haan & Geenen, 2016; Wakenge & Hilhorst, 2017). Additionally, the democratic formalization of equitable mining labor practices may get conflated with the legalization of minerals as commodities, as seen in a case study of Rwandan ASMs arguing that formalization efforts 'could promote legalization of the commercialization of the minerals, but not of the actual mining operations, because of the complexity and costs associated with obtaining and maintaining the artisanal and small-scale licenses and respective obligations' (Barreto, Schein, Hinton, & Hruschka, 2017, pp. iv–v). This creates a false impression that the sector is legalizing its labor

when it is only the commercialization of the minerals. Hence, legalization and formalization are not to be confused with labor reform. Such paradoxes drive this study's research questions. How does the legal formalization of mining impact women's outcomes in terms of income, gender-based violence (GBV), and their legal terrain? What lessons might Rwanda teach us about having more inclusive economic development in extractive communities, and what might this mean for women and other vulnerable community members across the Global South?

## **2. Cooperatives and women in Rwanda**

Rwanda's formalization process assumes that local mining cooperatives are necessarily beneficial for women. The Rwandan government's 2018 National Policy on Cooperatives outlines how cooperatives 'play a significant role' in job creation, financial empowerment, and GBV reduction for women (Ministry of Trade & Industry, 2018). The government has encouraged the establishment of women-focused micro-credit cooperatives, funded training programs in cooperative management, and given legal personality to women's cooperatives because they are a 'potential vehicle through which the cooperative members could create... gender equality' (Rwanda Cooperative Agency, 2018; Musabwa, 2018, p. 45). Proponents argue that people-centered cooperative models in mining could have many benefits in Rwanda. They posit that cooperatives can help close the gender wage gap, place women in leadership positions, and reduce GBV (Blackden, Munganyinka, Mirembe, & Shyaka Mugabe, 2011; Werner, 2017).

There has not yet been a comprehensive study of women's outcomes in Rwanda's mining cooperatives. Mujawamariya, D'Haese, and Speelman (2013) examination of coffee cooperatives highlights the membership characteristics of easy to access labor, land tenure, risk aversion, and reciprocal trust, while Verhofstadt and Maertens (2014) and Ortega et al. (2019) found them to impact farm performance indicators in Rwanda positively. Cooperatives are critical stakeholders in Agricultural Innovation Platforms (AIPs); AIPs are argued to facilitate gender mainstreaming through the equitable sharing of financial benefits among women and men (Adam, Misiko, Dusengemungu, Rushemuka, & Mukakalisa, 2018). Looking at the role of agricultural cooperatives in post-genocide economic reconstruction, Hategekimana's (2011) examination of the former Mayaga region in Southern Province contends that cooperatives 'empowered women' by generating income after 1994. Another study found that female members hold cooperatives in high esteem and that the government-mandated inclusion of high numbers of women in cooperatives promoted strong institutions and sustainable economic development (Meader & O'Brien, 2019). Common among cooperatives' supporters, there seems to be an implicit belief that improved incomes and engagement in collective decision-making translate into lower rates of GBV. The International Cooperative Alliance, an international NGO, has argued that 'higher female earnings and bargaining power reduced domestic violence.' At the same time, Cherry and Hategekimana (2013) find that Rwanda's successful cooperatives coupled with GBV strategies serve as lessons for other African countries to improve women's well-being. This faith in cooperatives' capacity to potentially reduce GBV stems from the ample evidence that disadvantaged women are at a higher risk of abuse worldwide and that financial resources expand women's choices to improve their conditions (Aizer, 2010; Britton, 2020; Djamba & Kimuna, 2015, introduction). However, this link between African cooperatives and gender violence has not been explicitly examined.

Moreover, there are examples of the unintended negative consequences of the mining formalization process across Africa (Hilson, Hilson, Maconachie, McQuilken, & Goumandakoye, 2017; Hilson, Hilson, Siwale, & Maconachie, 2018). In some instances, national laws put in place to protect women at mining sites across central and eastern Africa have been used to exclude them altogether, while domestic violence has been attributed to women's higher mining incomes threatening their husbands' masculinity (Atkinson, Greenstein, & Lang, 2005; Bashwira, Cuvelier, Hilhorst, & van der Haar, 2014; Hinton, 2016, p. 7). The Rwandan state's

approach then fails to account for how much of women's well-being depends not on formal law and policy but customary sociolegal practices or normative 'soft law' (Merry, 2007; Twining, 2009). Women report that the most significant challenges to their mining engagement are local leaders, gender stereotypes, and informal norms that bar them from equal finances and gender-specific safety standards (Buss et al., 2017; Hilson et al., 2018; Huggins, Buss, & Rutherford, 2017). In some instances, state regulation works against the favor of women, presenting questions about how rural Rwandan women experience changes in the mining sector, including the regulation of cooperatives.

This case study is compelling because Rwanda's state support of cooperatives combined with the national agenda's emphasis on gender equality is unique in Africa. Rwanda is distinctly poised to host successful cooperatives as a centralized state that can support top-down policy initiatives to prescribe economic activities and undergird its National Gender Policy 'to create a bold, visible, and united force for gender equality' (Blekking, Gatti, Waldman, Evans, & Baylis, 2021; Ministry of Gender & Family Promotion, 2021, p. 13). It has created a friendly legal and policy environment for gender mainstreaming in mining and has attracted willing stakeholders (Nsanziimana, Nkundibiza, & Mwambarangwe, 2020). Women have experienced this process of cooperative formalization through layers of multiple identities based on their economic positions, labor roles, culture, and other social constructions. Accordingly, this study adopts feminist political ecology's intersectional approach to understanding what Call and Sellers (2019) describe as the 'gendered unevenness of the global landscape of vulnerability' in mining communities. In turn, the intersectional approach informs the driving research questions.

### **3. Feminist political ecology as a lens and intersectionality as an analytical framework**

Feminist political ecology (FPE) weds feminist theory and praxis to political ecology, or the study of relationships among political and socio-economic factors and the environment. It combines conceptions of gendered environmental politics with understandings of socially constructed labor roles, inequalities, and women's forms of knowledge and environmental relations. Feminist political ecologists maintain gender as a crucial variable interacting with class, race, ethnicity, and other identity markers to constitute access to, control, and information about natural resources. Additionally, social identities are constituted in and through relations with nature and everyday material practices (Sundberg, 2016). With social identities embedded in FPE, the theory of intersectionality becomes its natural mate as an applied tool. Initially a legal concept, intersectionality describes how systems of oppression overlap and interact to create distinct marginalizing experiences for people with multiple identity categories (Cho, Crenshaw, & McCall, 2013; Crenshaw, 1989). Both FPE and intersectionality reject the notion of women as homogenous and acknowledge differentiated power axes among them. As an example from this study, being a single mother is an extra layer of 'low class' and rights-marginalizing identity for Rwandans (Berry, 2015). Without marriage, less financial and legal security drive unwed women to engage in socially stigmatizing mining work more frequently than those with husbands.

This paper's feminist ecology lens and intersectionality framework draw heavily on the analytical approaches outlined by Rocheleau, Thomas-Slayter, and Wangari (1996), Bezner Kerr (2014), and Yaffa Truelove (2011, 2019). Rocheleau et al. advocates employing gender not just as a lens but as a driving variable in studies of natural resource access and control, a variable that interacts with class, case, race, culture, and ethnicity to determine processes of ecological change (p. 4). Kerr (2014) argues for a feminist approach that combines social vulnerability with feminist political ecology because vulnerability to environmental politics is a function of both physical and social factors. She does not embrace social vulnerability theory in its entirety because it tends to overemphasize women's dependencies and underemphasize their agency. However, She thoroughly interrogates women's vulnerabilities to environmental changes due to

pre-existing disadvantages in social, economic, political, legal, and cultural opportunities. Truelove's work attends to the everyday practices and micropolitics within communities by examining how daily behaviors and lived experiences are produced by, and productive of, gender, class, and other social power relations' (2011, pp. 143–144). Important to this study of mining formalization, her approach to analyzing water regulation accounts for how informal and illegal practices shape how people encounter, understand, and construct state power and the law regarding natural resources (Ibid, p. 150–151). These FPE scholars focus on how intersectionality shapes how people adapt to social and environmental changes and how gender, age, formal education, and livelihood compound to create different adaptation outcomes for women (Erwin et al., 2021).

An intersectional approach to this case study is necessary because women's vulnerability to extractive politics is based on their experiences embedded in economic, legal, and cultural constructs distinct from those of men—and which play out at the micro and macro levels. Although less than compared to its African neighbors, Rwanda hosts a feminization of poverty in which women have lower income levels than men and higher expenditures on children (Gacinya, 2020; World Bank, 2015). Although there is gender parity in Rwandan law on paper, ample research has shown that women's rights to access do not translate into women's actual control or decision-making over assets or land in Africa (Berry, 2015; Okonya et al., 2019). In reality, patriarchal structures and norms challenge women's full autonomy over resources (Abbott, Mugisha, & Sapsford, 2018). Moreover, while the Rwandan state's efforts at modernization attempt to improve lives, government restrictions of women's informal self-employment, such as ASM workers and unlicensed vendors near mine sites, may legally restrict women's ability to move out of poverty. Women's vulnerabilities are also undergirded by their roles as mothers and caregivers. Their domestic responsibilities may restrict their ability to make self-maximizing financial decisions. Then, economic globalization positions African women poorly in mining's global supply chain. Rwanda's rapid formalization to help meet the world's 3 T demands efforts have outpaced its capacity for gender mainstreaming in mining when measured by gender parity in extractive employment, supervisory roles, and the wage gap. These market demands may increase pressure on men to migrate for work, thereby leaving women and children behind (Bello, 2008). International mineral traceability initiatives have not historically put women's outcomes at the fore of programming. These national-level and global structural disadvantages combine with gendered inequalities to determine women's experiences. Ultimately, a study of extractive economies invites a feminist analysis due to power relations ingrained in male-dominated workplaces and communities, natural resource regulations, and global supply chains.

#### **4. Methodological notes**

This is a case study of a mixed-gender mining cooperative operating since 1999 in Ruli, Gakenke District in Northern Province. The Coopérative Minière de Kababaru-Gikingo (COMIKAGI) was an ideal case study because it is the country's largest and most productive small-scale mining cooperative, with over 1600 members in its 821-acre concession. It is an example of the economic significance of reasonably well-organized artisanal production of tin (cassiterite), tantalum (tantalite), and commercial sand (Barreto et al., 2017, p. 13). It operates alongside three legal, private mining companies and numerous informal ASM workers; this relatively harmonious coexistence of large-scale mining, cooperatives, and ASMs is termed 'cohabitation' in the ASM literature (Hilson, Sauerwein, & Owen, 2020). Distinct from its private counterparts, COMIKAGI's primary function is to administer the 52 (all male) subcontractors who work below it. This role includes approving the subcontractors' choices in extraction areas, registering production levels, counting registered and casual employees, overseeing accident insurance, administering security, acting as a payment conduit between miners and buyers, and liaising with the national collective of cooperatives, the Fédération de Coopératives

Minières au Rwanda (FECOMIRWA). COMIKAGI also finances some common infrastructure essential to production, such as water pumps and reservoirs, and ensures production stays within the certified trading supply chain.

COMIKAGI's host community, Ruli, was chosen from six field sites across Rwanda during a more extensive qualitative study conducted in January–June 2021. Data was collected via convenient, specifically snowball, sampling in Ruli from April to May 2021. At each of the six locations, the research design drew from ten one-on-one, semi-structured interviews with female miners and community women, three focus group discussions (FGDs) of eight-ten women, and two participant observations at mine tunnels, pits, worker commuting pathways, and cafeterias serving miners. Thus, there were 60 interviews, 18 FGDs with six different groups, and 12 observations in total. Additionally, two map-making workshops at each site facilitated geospatial explanations of women's experiences and data was enhanced by 12 key informant interviews in Kigali. In Ruli, three of the ten interviewees and FGD participants worked as transporters, two in COMIKAGI office jobs, and the other five had outside employment. All were between 18 and 62 and non-migratory locals of the district (men often move for mining work, but women typically do not). Audio-recorded interviews were conducted in Kinyarwanda with Rwandan field enumerators. The author led bilingual FGDs in English and Kinyarwanda with an interpreter. Recordings were then translated from Kinyarwanda to English during transcription by hired field enumerators. The process was designed to help ensure confidentiality.

Textual data from interviews and FGDs underwent conceptual content analysis in NVivo. Alves and Lee (2022) define content analysis as 'the systematic study of a defined body of communication content to draw inferences about contexts, meaning, and intentions.' It is a flexible yet systematic research method that compresses words or segments of text into coded categories that lead to replicable inferences about the speakers' meanings (White & Marsh, 2006). Specifically, conceptual content analysis focuses on concepts—here, income, GBV, and legalities—and then quantifies the number of times a word or phrase related to those appears in the text (Sabharwal, Levine & D'Agostino, 2018). In line with Krippendorff (2004), counting was not a sole prerequisite of content analysis here; verbal categories and the listing of quotes were considered as valid as numbers and counting functioned to triangulate the quantification. The goal was to examine the frequency occurrence of explicit and implicit terms ('word senses') in the data related to the three themes. These target concepts allowed the four trained coders to stay focused while also incorporating implicitness ('I was too scared to walk to the mine' would be coded as 'economic violence' although the respondent did not say 'I lost income because I was afraid'). This was essentially a process of selective reduction.

This methods section calls for a reflexivity note on the author's 'outsider' positionality. Reyes (2020) helpfully describes researchers' ethnographic toolkit as having visible (nationality, race) and invisible (social capital, researcher status) tools. However, as a white researcher in rural Rwanda, this author endeavored to make her invisible capital visible to ensure an ethical balance of power/knowledge with participants and fully informed verbal consent (which they preferred over written consent). The author openly discussed how much she had to learn from participants, spoke elementary Kinyarwanda during introductions, gave participants written interviews and FGD questionnaires in Kinyarwanda to review privately before agreeing to participate, and ensured they gave their consent in Kinyarwanda to both the author and at least one Rwandan team member. To help balance out bias based on researcher identity, the field team had a diversity and balance of intersectional identities different from the author's. The team included two Rwandan women and two Rwandan men, each younger and older than the average age of respondents.

## 5. Results

Rwandan women in all six communities said their life is better with mining than it would be without it. The code referring to mining's benefits for women is the most frequent in the study.

In all sampled sites, women felt mining was a vital supplement to farming income, felt their income was higher because of mining, and perceived the taboos around women's mining work to be slowly evolving. The data did not indicate improved income or minimized GBV experiences at the cooperative. Additionally, female miners in Ruli who are not official COMIKAGI members are unhappy working casually without organizational protection. All respondents in the six communities stated forced transactional sex to obtain or keep mining jobs, or to have one's earned salary released, was the most pervasive form of GBV, and Ruli women were no different.<sup>2</sup> The similarities among Ruli and private company sites can be understood by the fine line between cooperative and private company—fieldwork revealed that COMIKAGI only has 34 voting members and only four of them are women. Only 17% (285/1649) of COMIKAGI's non-member workforce is female. Nevertheless, the section below demonstrates one dimension of cooperative work that has a notable impact on women's outcomes—an expanded legal understanding of individual rights and their standing in a more extensive system.

### 5.1. *Cooperatives may not increase women's incomes*

Because mining income is uncertain, women fear the losses.

-Ruli farmer, 38, April 28, 2021

This study did not find evidence that the cooperative business model increases women's incomes or positively impacts their financial outcomes compared to private company employees. Protocol questions about income focused on basic salaries, savings rates, and asset accumulation over time in cooperative employment. The cooperative's pay scale is more-or-less in line with private company patterns over time, including the evident gender wage gap. Women work for sub-contractors, not COMIKAGI itself. The minimum salary for a 6-day workweek is around \$24 per month, depending on one's specific job, which is not notably higher than for other full-time female miners at other sites. Ruli women also have similar reported savings rates of about 3% of income.<sup>3</sup>

There are several drivers behind the cooperative's limited capacity for financially empowering women. First, the scant women who are members and part of the non-member workforce for COMIKAGI mean it lacks a critical mass of women with the capacity to help the cooperative meet its purported goals of women's empowerment. The numbers simply are not there. Most of the women of COMIKAGI work without the benefits or security of official membership, including voting rights, private insurance, and the biannual dividend payout based on collective profit. Women's membership in COMIKAGI is limited because of their diminished access to buy-in costs and assets needed to join, background checks on potential members' reputation and character that are gender-biased, the requirement that women need their husbands' permission to join, and the rule that husbands and wives are not permitted to both be members because of potential conflicts of interest and so men tend to be the official members in mining families. With these norms, there are limited opportunities for any woman to use cooperative membership to improve her financial prospects notably. It is nearly impossible for the most socioeconomically vulnerable women to do so. Then, women who informally mine to supplement other forms of income cannot directly sell their minerals to COMIKAGI. They must find an official COMIKAGI worker to represent the minerals as their own, and that worker takes a cut from the cooperative's payout (observation, April 27, 2021).

Also, like with private companies, the cooperative's female employees are likely to be among the community's most vulnerable, those driven by economic desperation to work in stigmatizing jobs seen as unsuitable for women. They tend to be single mothers, widows, and those marginalized by sex work (although Ruli women reported the latter stigma is evolving). Around half of the full-time female miners sampled were unmarried. A common trope in the collected data is that respectable married women do not need to engage in the 'dirty' business of mining and interact in male-dominated spaces; they should be farming or taking care of their



households. Salaries are paid in cash every Saturday to casual workers without written contracts, and women often work seasonally to supplement their farming income.<sup>4</sup> Although the sub-contracting system is theoretically more egalitarian than private company investment, the initial purchase cost of land and administrative hurdles, such as subcontracting permits, are still too high in the cooperative model to allow women to benefit. There was no evidence that the cooperative business lent members any better resiliency to COVID-19 financial shocks. Respondents reported the same mining income loss due to illness and social distancing measures as did women at other sites, which is in line with research on COVID's deleterious effects at various mines (Hilson, Van Bockstael, Sauerwein, Hilson, & McQuilken, 2021).

## 5.2. *Cooperatives may not reduce GBV*

Gender violence is worse than before. One of the causes is that men who work in mining sites earn a lot of money and use it to take advantage of women's poverty.

-Ruli miner and farmer, 55, April 28, 2021

Like the analysis of financial benefits, this study did not find evidence that cooperatives keep women safer from GBV than company-based employment does. GBV-related codes in NVivo had comparable frequencies, embeddedness, and reached saturation at similar rates among all six communities. All participants reported related issues of mining-related GBV in the forms of transactional sex, sexual violence against teenage girls near mines, and high rates of physical GBV resulting from payday drinking near extraction peripheries. All women agreed that sexual assaults and other forms of GBV go largely unreported because there are no trustworthy reporting pathways. Like in private mining company employment in Rwanda, there is a general mistrust among women and COMIKAGI leaders. Ruli women reported not feeling free to speak up and being unsure about the 'stories' COMIKAGI leaders tell people, such as when inspectors and investors visit mining sites.

Importantly, Ruli women had four times the code frequency than women in communities with private companies for one specific code—transactional sex within the mining organization. The three reasons offered by Ruli participants for sexual exchanges were to (a) obtain an initial job, (b) have one's monthly salary released, and (c) avoid being fired. In the words of one respondent, 'Men cancel the mining activities of some women to do sex with them. Sexual activities between men and women miners for money are rife' (Ruli miner, 31, April 28, 2021). A high reporting of transactional sex within the cooperative could be due to several factors. The cooperative model's decentralized structure lends itself to transactional sexual relationships because power is dispersed among more actors. In other words, more men may have the power to coerce sex than in private companies with fewer male leaders. Alternatively, the horizontal structure permits upward mobility for women at the lower end of the organizational hierarchy, and transactional sex could be a salient means of achieving that upward mobility with limited options. Moreover, as local entities are less governed by national and international legal constraints, cooperatives may allow normative behaviors driving sexual commerce than would otherwise be mitigated in formalized mining companies meeting codified legal requirements. In her study of women in Kenya's patriarchal cut flower industry, Lowthers (2018) aptly terms this 'employment sex' on the labor continuum that exists within an 'institutionalized sexual economy.'

Additionally, Ruli women show a unique awareness about GBV not seen elsewhere. They demonstrated twice the instances of GBV mentions among themselves as a conversation topic (participant observations). Women elsewhere felt it was kept secret. According to frequency counts in NVivo and from participant observations, Ruli women primarily said they should take cases of violence to leaders for resolution and three times the coding for reporting that the government punishes perpetrators in a way that, according to participants, helps lower rates of GBV. In comparison, women in the other communities more frequently said they 'are not

aware of any problems or conflicts,’ despite the same documented issues of GBV everywhere. Taken together, perhaps Ruli participants’ violence awareness is a reflection of their expanded rights perceptions.

### 5.3. Cooperatives may expand rights awareness among members

Who puts [laws] in place is the government; then, they pass through the cooperative to communicate the laws to us, employee miners.

-Ruli farmer and miner, 47, April 28, 2021

Although the study did not indicate that women’s measurable outcomes were improved at the cooperative, women spoke as if they had *a right to improved outcomes*. Even if cooperative business models may not improve women’s financial outcomes or mitigate GBV, the symbolic power of cooperatives’ egalitarianism could augment women’s legal understandings and sense of rights. This egalitarian ethos would be an unintended secondary effect, an expanded ‘legal consciousness’ in anthropology. Legal consciousness refers to the ways people understand, experience, and act concerning the law and integrates legal knowledge, legal awareness, trust in the law, and opinion about the law (Chua & Engel, 2019). It is how ordinary people think of, talk about, and understand the law in their everyday lives (Ewick & Silbey, 1998; Merry, 1990). For example, over 1/3 of participants in private company communities said they were ‘not aware of any laws’ regarding mining. In contrast, every Ruli respondent could name at least one component of the National Mining Law (around 75% of these responses were about safety guidelines).

Ruli women voiced a greater understanding of government agencies, private companies, and cooperatives determining mining legalities. They had three times the codes for saying the government sets and enforces mining laws and that companies and cooperatives must comply, and with high coding density for also saying government and companies are like a legal ‘collaboration’ back-and-forth. One Ruli woman correctly asserted, ‘I think mining laws are set by the government, Ministry of Health, and district leaders’ (farmer and miner, 32, April 29, 2021). In contrast, a majority of all other women in other communities reported more often that the mining company itself makes mining laws. They were less likely to understand the checks and balances relationship between government and private companies or that codified law should check bad behavior by extractive organizations.

Furthermore, Ruli is the only sampled site in which all respondents said they knew where to take their various problems in rural Africa’s legal environment of pluralism. In postcolonial milieus, indigenous rulers, state police, the national military, or foreign security agents may oversee conflict resolution all at once. Individuals must ‘forum shop’ to decide which pathway to use to resolve their grievances (Von Benda-Beckmann, 1981). In other words, ‘different problems are for different places’ in conflict management in environments of multitudinous legal planes (Munir, 2020). In contemporary Rwanda, disputes among neighbors go to a local leader or *umudugu* chief; large-scale thefts are for the police; violent assaults are directed to the Rwanda Investigations Bureau (RIB); work-related problems may be channeled to company supervisors. COMIKAGI is distinct from private company mines in that it has a head Advisory Council subdivided into three committees—the executive, audit, and conflict resolution committees (FGD, April 29, 2021). Thus, it has a centralized body that acts as a sort of ‘legal triage’ for members’ conflicts. Every Ruli respondent said she knew where to take her problems and around 75% said they take their issues to one place, the COMIKAGI Advisory Council’s recommended committee. One Ruli woman said, ‘employees are now aware of the laws that protect us’ (miner, 44, April 28, 2021). Centralized conflict resolution can be for better or for worse because it can make remedying one’s grievance efficient or act as an undemocratic bottleneck. Ruli women felt the three committees were accessible conduits for their problems.

Conversely, women outside Ruli said with three times the frequency that they ‘did not take their problems anywhere.’

COMIKAGI women may have a greater understanding of their role in the mining sector at large. Only in Ruli FGDs did women voice comprehension of their place on the global supply chain of mining, or rather, a dissatisfaction with it. They understood they did vital work for minerals to be extracted and sold, but ‘rich men in offices’ earned so much more than them (FGD, April 29, 2021). One respondent said, ‘Men in this region act as the richest individuals. They consume money for nothing’ (Ruli miner, 32, April 29, 2021). Ruli was also the only sampled site where women complained no one informed them of the cooperative’s profit percentage in the entire supply chain, where sand and minerals go, or about miners’ incomes in other places. They lamented they are underpaid and undervalued, not a common sentiment in the other communities. This is not evidence COMIKAGI workers are told less about their work or less compensated. Instead, it indicates they have a sense of entitlement to information and fair wages, which can be seen as a positive sign of their legal and socio-economic awareness within a more extensive system. In the words of a self-appointed FGD leader, ‘Cooperatives are good because we can share ideas. Working for one man is not good’ (Ruli miner, 36, April 29, 2021).

## 6. Discussion

In the Ruli mines, especially COMIKAGI, there are many women who work there who are courageous enough to accomplish their tasks.

-Ruli farmer, 53, April 28, 2021

These findings fall within an extensive debate. Is legalization, particularly in the form of business cooperatives, necessarily helpful for vulnerable women in extractive communities? By direct measurements of wages and freedom from GBV, not necessarily, but this discussion section concludes by highlighting the indirect benefits that cooperatives may have on legal consciousness and women’s organizational capacity. Compared to direct private employment, cooperatives cannot improve women’s incomes or keep them safer from GBV if those cooperatives simply rearrange and reinforce pre-existing inequalities. When women and men experience differential access to financial resources and social capital in large-scale communities overall, this, in turn, impedes women’s ability to successfully engage in small-scale formal workplace institutions like cooperatives in a way that improves their own standing (Mulema & Damtew, 2016, p. 15). Such limited engagement is bounded at both membership and leadership levels due to cultural constraints of culturally-based gender gaps in education, domestic work, and the value placed on women’s leadership (Budi, Amungwa, & Manu, 2021, p. 137; Woldu, Tadesse, & Waller, 2015, p. 22). Then, cooperatives may also inadvertently reproduce traditional gender labor roles when membership increases women’s workloads. They may engage in greater production and shoulder a more significant proportion of the groups’ collective tasks when they become part of formal rural organizations (Mulungu & Mudege, 2020). A study of rural economic formalization in Ethiopia showed that even government activities meant to improve cooperatives, such as formally registering and inspecting cooperatives, do not measurably affect women’s engagement (Woldu et al., 2015, p. 3). Such findings bolster De Haan and Geenen (2016) argument that mining cooperatives can be an ‘institution that legalizes exploitation’ in Africa and Debusscher and Ansoms (2013) finding that gender mainstreaming policy efforts do not translate into higher levels of gender equality in multiple economic sectors in Rwanda. Thus, this study’s findings on women’s income and GBV experiences are well-grounded in prior research indicating that rural cooperatives are still male-dominated and systematically exclude women from membership, decision-making, and positions of power, particularly if those women hold intersecting identity markers for vulnerability.

Second, gender inequality within COMIKAGI may reflect traditional governance patterns among umudugudu chiefs and local councils. Local leaders function as an on-the-ground government authority, have customary power over workers and residents, and can facilitate mining operations through ‘social licensing,’ or community acceptance of mining (Nyembo & Lees, 2020; Ofori & Ofori, 2019). In turn, mineral economies function to raise income levels, provide much-needed direct and knock-off employment, and help ensure investment in mining infrastructure that also benefits the leader’s community, e.g. roads and bridges. However, local leaders have little incentive to meet the legal or justice needs of the type of socioeconomically vulnerable women who engage in mining in Africa: part-time and seasonal workers, those without strong kinship ties or land titles, and who are not official cooperative members. Beyond incentives, we can view local governmentality as a processual ‘repertoire of practices and forms of organization built over time’ as people seek to make an extractive living and authorities seek to exert power (Fisher, 2008). In such environments, Fisher (2008) argues that those ‘who do not approximate to the model of the small-scale mining entrepreneur responsive to sectoral modernizations, and who do not possess a mineral license, attributions of marginality can readily follow.’ If we view gender interactions with a power-laden relational lens, we can see how women continue to occupy the margins in this process of governance-creation within cooperatives.

Third, just like private companies, mining cooperatives function within more extensive structural violence systems that can harm female workers in extraction. Regardless of the type of business model with which women work, they still must navigate enduring challenges outside mines. They confront dangerous commutes to and from work, lower literacy and formal education levels impeding their professional options, and disproportionate domestic care responsibilities. According to Abbott and Malunda (2016), Rwandan women do 20 hours more domestic work per week than male partners. Additionally, the national emphasis on gender equality has added to women’s burden; their husbands now expect them to earn money as entrepreneurs while still doing the same housework and farming (p. 575). On a larger scale, women face impediments to traditional banking, decision-making power over assets shared with men, and harmful socio-cultural norms that inhibit their ability to enjoy potential mining benefits fully. Rural women have demonstrated a lack of legal knowledge and support, fear of domestic violence, and economic limitations based on patriarchal, customary practices (Ibid, p. 576). So long as cooperatives are built on a framing that only provides a ‘feel good’ response but does little to improve deeply-entrenched inequalities among members and workers, then they can do little to truly remedy inequality based on multitudinous burdens of gender, low formal education, rurality, and poverty.

However, these findings indicate that working for a cooperative rather than private direct employment may augment women’s legal consciousness and rights awareness through symbolic aspirations of equality. There is ample evidence that engaging in the formal workforce, in general, improves women’s political influence in Africa; then, in a 2015 global survey, 80% of respondents felt that cooperatives are better than other types of business in advancing gender equality (Bleck & Michelitch, 2018; Mlambo & Kapingura, 2019; Schincariol McMurtry & McMurtry, 2015). Cooperatives may expand consciousness and reconfigure mental constructs for members for several reasons. First, they offer physical spaces and social interaction in which members can exchange new ideas and essential information with less hierarchy. Social movement scholars have long studied how workplace interactions can refine one’s sense of justice, reify one’s membership in a social group, expand networks, and affect legal consciousness (Germain, Robertson, & Minnis, 2019; Lobel, 2007; Rojas & Heaney, 2008). Cooperatives may provide a horizontal setting for collective problem-solving and articulating strategic and basic needs. The support and mutual encouragement that a group of female entrepreneurs can give each other can also be crucial in helping to boost or maintain their self-assurance. One respondent said COMIKAGI ‘has improved my confidence to try something new. Since I ended up

working in mining, I was able to convince my husband to join it too' (Ruli miner, 36, April 28, 2021).

Moreover, cooperatives create a structure for marginalized women to expand and deepen their professional networks even when formal and male-dominated organizations omit them. For example, women at COMIKAGI who were not part of formal savings and loans schemes overseen by the cooperative had created their own informal savings groups among their female colleagues they had met at work. One said, 'In our community, we have formed small cooperatives or groups where we have joined together to save our money from our work, and this helps anyone who could meet with unexpected crises to get a short-term loan and solve her problems. At the end of the year, each of us gets her shares and its profit from the loans and other activities we have done for the whole year' (Ruli miner, 36, April 27, 2021). Additionally, they arranged their childcare exchange provisions and set their walking commutes in pairs for physical safety, an example of women's high propensity for pro-social behaviors in rural organizations (FGD, April 29, 2021; Kormelinck, Plaisier, Muradian, & Ruben, 2016). Such informal and alternative cooperative services can coexist with formal ones, and such unregistered self-help alliances have benefited women in Mali, Nigeria, Cameroon, and Senegal (Nippierd, 2012). Overall, 'Whatever we do, we find working for a cooperative is better because there is more than one person who exchanges views or ideas before making a decision' (Ruli miner, 35, April 28, 2021).

## 7. Conclusion

Development scholars and practitioners maintain high enthusiasm for cooperatives to benefit vulnerable rural women disempowered by traditional capitalist economies. They have been touted as an avenue for increasing income, access to credit and loans, upward career mobility, safety measures, and more gender-equal governance in the workplace and the outer community. Through intersectional analysis, this case study finds that such support for cooperative business models may have some grounding, but not in the form of improved financial outcomes or reduced GBV for vulnerable women when compared to direct, private company employment. The dynamics of mining cooperatives embody the same unequal gender dynamics that marginalize women outside the collective organization—traditional norms about women's professional capacity, earning potential, social roles, and various forms of structural and economic violence. Formalizing labor through cooperatives does not ameliorate more extensive gender-based vulnerabilities for women.

Nonetheless, these findings indicate cooperatives might foster a rights-based ethos among their female laborers, which, in turn, alters their perceptions of the legal terrain they navigate vis-a-vis rights and power. The women of COMIKAGI demonstrate an expanded conception of their role in the mining supply chain, right to access justice for their violations, and entitlement to voice their positions with authorities. These results bound the idea of currently-implemented cooperatives as a panacea for women's marginalization in rural economies. Nevertheless, they highlight cooperatives' aspirational potential to transform mental constructs around rights, governance, and power. This requires cooperatives to be implemented as tools to deconstruct more significant gender inequalities outside the organization rather than reproducing them.

## Notes

1. For example of Rwanda setbacks in legalization, there have been documented reports of the smuggling of 3T minerals from DRC across the border into Rwanda and then tagged as Rwandan production, including a recent UN Midterm Report from 2020 (Sharp, Behalal, Catalán, Sollazzo, Vogel, & Zounmenou, 2016). These reports include allegations that Rwanda Defense Force soldiers were complicit in the smuggling and in violence against

civilians near Congolese mines (Schütte, Franken, & Mwambarangwe, 2015; Hanai, 2021; Postma, Geenen, & Partzsch, 2021).

2. All transactional sex is defined in this study as a form of GBV in these six communities because it exists on a broader continuum of men’s exercise of gendered power and control over relatively vulnerable women. For further reading on this systemic link and women’s agency, please see Thaller and Cimino (2017) and Ranganathan et al. (2017).
3. Exact averages for key outcomes from NVivo can be seen below:

	Average in cooperative community	Average among company communities
Monthly income	\$28	\$30
Monthly savings	3%	3%
	Coding frequency in cooperative community	Average coding frequency among company communities
COVID diminished mining income	1	1.2
Transactional sex for employment	12	3.2
Government punishes GBV	11	4
Don’t hear about GBV	3	10.6
National government sets and enforces mining laws	15	5.2
Not aware of any mining laws	0	3.4
Does not take problems anywhere	3	9

4. Contracts and monthly salaries paid into bank accounts are only for higher administrative staff with formal education.

### Ethical approval

This research was approved by the Republic of Rwanda’s National Council of Science and Technology on September 26, 2020 (approval no. NCST/482/197/2020). It was conducted under the supervision of the University of Rwanda’s College of Science and Technology (CST) and CST’s Center for Excellence in Biodiversity and Natural Resource Management. It adheres to the ethical guidelines of the Helsinki Declaration (updated in 2018). All participants were verbally informed of their rights as human subjects and provided informed consent.

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No potential conflict of interest is reported by the author.

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