

## WOMEN PARTICIPATION IN ARTISANAL GOLD MINING: A CASE OF MACALDER MINES, KENYA

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### Abstract

The aim of the study is to determine women's participation in artisanal gold mining in Macalder mines in Migori County, which is found in Southwestern Kenya. A mixed-method research design was used in the study to collect and analyse both qualitative and quantitative data. Purposive and snowball non-probability sampling methods were used to select the sample size since there is no proper data on the number of women involved in artisanal gold mining. A questionnaire survey and focus group discussions were used to collect data from the respondents. Descriptive statistics and inferential statistics were used to analyse the data. The results indicate that 80.8 per cent of the respondents were between 18 and 49 years old. Most of the women working in Macalder gold mines were earning <Kshs 5,000, which was not enough to sustain them. Low remuneration, health risks, cultural bias, domestic responsibilities and sexual harassment were the main challenges that women were facing in the gold mines. The study recommends formulating and implementing policies that recognise and safeguard the interests of women in artisanal gold mining. Women should also be provided with protective gear to reduce the health risks from gold processing.

**Key terms:** Activities, artisanal gold mining, macalder, women.

## 1.0 INTRODUCTION

Artisanal and small-scale mining has been on the rise in most countries in the world, with almost 40.5 million people directly involved in the activity and 150 million depending on it for their livelihoods (Intergovernmental Forum on Mining, Minerals and Sustainable Development (IGF), 2018). This has been attributed to the high unemployment rates with a global consensus that growth in artisanal mining is poverty-driven (Mugo et al., 2020). Women constitute a significant number of the people involved in artisanal gold mining, accounting for approximately 30 per cent of the workforce (Hinton et al., 2003; Hinton, 2011; Lahiri-Dutt, 2012). This number is significantly higher in Africa, with approximately 50 per cent of the workforce in Artisanal mining being women (UNECA, 2002). Although their participation is significantly high, women are consigned to activities that are viewed as auxiliary or subordinate (Dreschler, 2001). The activities include transport, processing, sieving, crushing, sorting and marketing (Akabzaa & Darimani, 2001). However, most of the studies have looked at women from the disadvantaged point of exclusion and having a secondary role in ASM. It is important to recognise the changing roles of women in the gold mines and their immense contribution to the rural economies in the gold mines. This study explores women's important roles in artisanal gold mining in Macalder mines in Migori, Kenya.

## 2.0 LITERATURE REVIEW

Women's participation in artisanal gold mining has long been ignored or given very little attention, despite this significant contribution since most of the literature is dominated by men's role in the sector (Jenkins, 2014). The masculine image created in traditional mining activities when the process was labour-intensive, dangerous and hazardous continues to limit women's participation in artisanal gold mining activities (Lahiri-Dutt, 2012). Cultural barriers and some beliefs that women cast bad luck when in close proximity to a mine justify the exclusion of women from artisanal mining activities in some African societies (Hinton et al., 2003). Recent studies have pointed to the need for supportive policies to enhance the ability and recognition of the role of women in artisanal gold mining (Kelly et al., 2014; Werthmann, 2009). Some scholars (see Jenkins, 2014; Baswira et al., 2014; Benya, 2015) has proposed that research on Artisanal gold mining should focus on the activities of women in the mines and centre them as important actors in mining economies.

The main factor that differentiates the contribution of men and women in artisanal gold mining is the role they play. The roles, however, vary from one context to another. These roles may ensue at any stage of the artisanal mining value chain. It is important to note that the engagement of women in mining typically declines with the increase in the degree of organization and mechanization (Eftimie et al., 2012). Women involvement in artisanal gold mining can either be direct or indirect. Direct participation includes activities such as hauling of ore and water, sieving, washing, panning and sorting. A few of the women are concession owners, dealers, mine operators, buying agents, dealers and equipment owners. The ability of women to participate in artisanal gold mining is influenced by the legality of the mining activities and the presence of cooperatives (Hinton et al. 2003).

Social factors may also influence the roles of women like it is the case with Akoon mining cooperative in Ghana, where women are not engaged in mining directly but participate in activities such as carrying water and gold ore, and pounding the ore, due to the potential risks of underground mining (Akabzaa & Darimani 2001). Indirectly, women participate in artisanal gold mining through roles such as cooking, security, book keeping, and taking care of children brought to the site by other women. These peripheral

roles are often omitted from the official records of mining, rendering the contribution of women in artisanal gold mining insignificant (Hinton et al. 2003). This failure to document women's activities arises from different reasons including poor record keeping due to the informality of the sector, the perceived marginal contributions of women and fear of government interference (Eftimie et al., 2012).

### 3.0 METHODOLOGY

This study adopted a mixed methods research design with elements of qualitative and quantitative methods (See also Johnson and Onwuegbuzie, 2004). The study population included owners of the mines, women involved in artisanal gold mining activities and gold miners. Due to the challenge of a lack of proper data on the number of people involved in artisanal gold mining in the study area, the study adopted non-probability sampling procedures to select a sample size (C.F. n Owusu-Manu et al., 2018). Snowball and purposive sampling procedures were thus adopted. Purposive sampling allows the researcher to decide on the persons to include in the sample depending on their willingness to participate and their knowledge and expertise in the subject under study. The study used snowball sampling to determine the sample size through key informants. Once a key informant was selected, they were used to suggest the next person until a sample size of 120 was attained (See also Lewis and Sheppard, 2006; Neville, 2007; Debrah et al., 2020).

A structured questionnaire was used as the main tool for data collection. Hundred and twenty (120) questionnaires were administered to the respondents. The questionnaire was divided into two sections. The first section addressed the demographic profile of the respondents, while the second part was to collect data on the roles of women in artisanal gold mining. In addition, focus group studies were also used to collect data from groups of women who were found working in groups.

Microsoft Excel application was used in the analysis. Descriptive statistics (Mean, standard deviation and frequencies) and inferential statistics (relative importance index) were used to analyse primary data collected in this study (See also by Ali and Bhaskar, 2016). The relative importance index enabled the study to rank the responses and identify the most important roles of women in gold mining. The determination of the relative importance index was based on the following formula (Owusu-Manu et al., 2019);

$$RII = \sum W / AXN$$

Where;

RII is Relative Importance Index

W is the weight assigned to each respondent based on a scale of 1-5, 5 being the highest and one the lowest.

A is the highest weight.

N is the totality of respondents.

### 4.0 RESULTS AND DISCUSSIONS

This section presents an analysis of the responses from the study. The results will be presented in both qualitative and quantitative forms.

#### Demographic Profile of Respondents

This study established that most of the respondents, 75 per cent (Table 1), were female. This can be attributed to the purposive sampling that mainly selected more women to be part of the study. With

regard to the age of respondents, it was established that most of the women (45%) involved in artisanal gold mining were aged between 30 and 49 years. This could be in regard to the fact that, at that age, most women have young families they need to care for. In addition, women aged between 18 and 29 accounted for 35.8 per cent of the respondents, while 18.3 per cent were aged between 50 and 69 years. Only 0.9 per cent of the respondents were aged 70 years and above. The participation of women in artisanal gold mining activities declines with age, with the youthful ages of 18 and 49 years accounting for 80.8 per cent of the respondents. This is due to the fact that older women have already lost the energy to participate in gold mining.

**Table 1: Demographic Profile of Respondents**

Variable	Frequency	Percentage (%)
<b>Gender</b>		
Male	30	25
Female	90	75
<b>Age</b>		
18-29	43	35.8
30-49	54	45
50-69	22	18.3
>70	1	0.9
<b>Marital Status</b>		
Single	25	20.8
Married	51	42.5
Separated	15	12.5
Divorced	11	9.2
Widowed	18	15
<b>Education Status</b>		
Not attended school	9	7.5
Primary School	51	42.5

Secondary School	58	48.3
College/University	2	1.6
<b>Employment Status</b>		
Formal employment	7	5.8
Informal employment	113	94.2
Retired	0	0
<b>Income level</b>		
<3000	15	12.5
3000-4999	27	22.5
5000-9999	36	30
10000-14999	17	14
15000-19999	14	12
20000-29999	6	5
>30000	5	4
Total	120	100

The study established that most of the women (42.5 %) involved in artisanal gold mining activities were married. One of the possible explanations for this is that some married women come to work in the mines because of their husbands who work there. It could also be attributed to the need to get more income to improve their well-being. Respondents who were single, separated, divorced and widowed accounted for 20.8 per cent, 12.5 per cent, 9.2 per cent and 15 per cent, respectively. With regard to education level, it was established that most of the respondents had either attained primary (42.5%) or secondary (48.3 %) education. Most of those who had attained secondary level education indicated that they were working in the mines since they couldn't join college after their secondary school, while others believed that gold mining provided the best employment opportunity. Some of the respondents, 1.6 per cent, had attained a college or university education. They were working in the mines because they had failed to secure formal jobs after their graduation.

Regarding the respondents' employment status, it was found that 94.2 per cent were employed in the informal sector, while only 5.8 per cent were in formal employment. Some of those in formal employment were engaged in artisanal gold mining to earn extra income. Most of them were involved in buying the gold from miners, while others owned the crushing machines. Regarding income levels, the study established that 30 per cent of the women involved in artisanal gold mining received between Kshs 5000 and Kshs 9999 a month. Moreover, 22.5 per cent, 12.5 per cent, 14 per cent and 12 per cent of the respondents were making Kshs 3000-4999, <3000, 10000-14999 and 15000-19999, respectively. On the other hand, only 9 per cent of the respondents were making above Kshs 20000 per month from gold mining. These are mainly the women who buy the finished product in bulk and sell it to other customers, such as those from main cities like Kisumu, Nairobi and Mombasa. For that earning <3000, it was established that they mainly engage in low-paying activities like sorting the alluvium, washing and serving food to the miners.

## Women's Activities in the Mines

Though their contributions are viewed by many as negligible, this study established that women take part in different important activities in artisanal gold mining (Table 2). Respondents highly ranked the provision of goods and services as the main activity that women engage in Macalder gold mines, with a RII of 0.81, a mean score of 3.91 and a SD of 1.122. Some women have shops around the gold mines where they sell essential commodities such as household goods, artisanal equipment such as sieves to the miners and the nearby households. Others have small food vending kiosks that feed the miners. Additionally, there are women who come to the mines as sex workers.

**Table 2: Activities of Women in Gold Mines**

Activity	Mean	Std Err.	Std Dev	Skewness	Kurtosis	RII	Rank
Provision of goods and services	3.91	0.071	1.122	-0.891	0.177	0.81	1 <sup>st</sup>
Panning	3.88	0.090	1.022	-0.994	0.824	0.79	2 <sup>nd</sup>
Washing	3.80	0.082	1.151	-0.612	-0.125	0.78	3 <sup>rd</sup>
Drying	3.78	0.095	1.144	-0.287	-0.314	0.76	4 <sup>th</sup>
Operating crusher	3.75	0.078	0.983	-0.453	-0.704	0.74	5 <sup>th</sup>
Disposing alluvium	3.54	0.096	1.170	-0.248	-0.489	0.71	6 <sup>th</sup>
Ore and quarry material purchase	3.41	0.088	1.132	-0.311	-0.627	0.70	7 <sup>th</sup>
Finished product purchase and sale	3.32	0.075	1.084	-0.921	-0.335	0.68	8 <sup>th</sup>

Panning (RII = 0.79; Mean = 3.88 and SD = 1.022), washing (RII = 0.78; Mean = 3.80 and SD = 1.151), drying (RII = 0.76; Mean = 3.78 and SD = 1.144) and operating ore crushing machines (RII = 0.74; Mean = 3.75 and SD = 0.983) ranked 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup>, respectively. All these activities are carried out next to the mines. Women carrying out these activities are normally paid on the basis of piece work. The miners will either take their ore to them and pay for the work, or they strike an agreement to share on a proportional basis the money they will get after getting the mineral after the end of the process.

When the mines are being cleared, most of the alluvium from that process is considered to have very small quantities of the mineral. Thus, the miners invite women to take the alluvium to dispose of. This activity scored a RII of 0.71, a Mean of 3.54 and SD of 1.17. The women then dry, crush, pan and separate the ore from the alluvium. However, in most cases, the amount and quality of ore from this alluvium are very low. Some women also purchase the ore and quarry material (RII = 0.70; Mean = 3.41 and SD = 1.132) from the miners and then take it through the separation process to establish if they will get some grams of the mineral. The women buy from miners with some hope that they can make some marginal profits after separation and selling to merchants. However, from the gain, very little benefit from this since the supposedly full sacks of mineral-bearing ore are often rendered disposable with insignificant value. A small percentage of the women, mostly from other places, act as gold dealers. They purchase the finished product (RII = 0.68; Mean = 3.32 and SD = 1.084) from the mines at a price of between Kshs 4,000 and Kshs 5,600 per gram. Their main objective is to get huge returns after selling the product to local and international markets.

## Challenges Women Face in Artisanal Gold Mining

Despite the many activities that women are involved in, most of them do not benefit from artisanal gold mining as would be expected. They face a myriad of challenges in their quest to earn a living from artisanal gold mining (Table 3).

**Table 3: Women's Challenges in Artisanal Gold Mining**

Challenge	Mean	Std Err.	Std Dev	Skewness	Kurtosis	RII	Rank
Low remuneration	2.89	0.054	1.012	-0.791	0.641	0.74	1 <sup>st</sup>
Cultural bias	2.72	0.091	1.244	-0.113	0.427	0.72	2 <sup>nd</sup>
Health risk	2.69	0.085	1.131	-0.464	-0.849	0.71	3 <sup>rd</sup>
Domestic responsibilities	2.65	0.099	1.108	-0.215	-0.724	0.69	4 <sup>th</sup>
Sexual exploitation	2.64	0.069	1.209	-0.552	-0.722	0.68	5 <sup>th</sup>

Low remuneration ranked highest among the challenges facing women in Macalder gold mines with a RII of 0.74, Mean of 2.89 and SD of 1.012. This could be in regard to the fact that most of the activities that

women take part in are low paying. For instance, those who pick the alluvium that is mostly regarded as waste by the miners may end up getting no gold after separation. Others buy the ore from the miners hoping to make some marginal profits after the separation process but get very low returns at the end. For those in the food vending business, it was established that the high cost of living was eating into their profit margins.

Some cultural beliefs (RII = 0.72; Mean = 2.72 and SD = 1.244) prohibit women from taking place in some activities in the mines. For instance, women are not allowed to take place in heavy mining activities such as digging and handling heavy machinery. These activities that are seemingly prohibited to women are the high-paying ones. This explains why women end up being sexually exploited. Sexual exploitation (RII = 0.68; Mean = 2.64; SD = 1.209) ranked 5<sup>th</sup> among the respondents. Some women have to sleep with the miners to gain favourable deals when purchasing the ore. Others who fail to get any income from the gold mining activities result in prostitutes getting some money for their upkeep.

Women's involvement in the purification process exposes them to health risks (RII = 0.71, Mean = 2.69 and SD = 1.108). Mercury which is used in the purification process, can cause lung, kidney and brain damage. Additionally, the accumulation of mercury in the body can cause detrimental effects on pregnancy and serious birth defects, including intellectual disability. Dust produced in the crushing process can expose them to skin and respiratory ailments. Moreover, the loud noise from the crushing machines can cause hearing complications for women. Lifting heavy material and the physical demands of the activities could lead to muscular disorders. The participation of women in artisanal gold mining is also hampered by their domestic responsibilities (RII = 0.69; Mean = 2.65 and SD = 1.108). They are charged with childcare, housekeeping and cooking, among other activities that limit the time for women to participate in gold mining.

## **Demographics of Women in Artisanal Gold Mining**

According to the results of the study, most of the women who took part in artisanal gold mining were aged between 18 and 49 years. This is the most energetic age, and most of the women in this age category need some income to sustain their families. However, it was also established that women of all ages were involved in gold mining activities to some extent. This is similar to IGF (2018), which observed that women of all ages participated in mining activities either individually or in groups. However, the income from gold mining activities is not enough to sustain the women. Most women were earning less than Kshs 5,000 per month. GROW (2017) established that 70 per cent of women working in mining sites solely relied on income from mining activities to sustain their households. Similarly, ILO/IPEC (2006) found out that parents involved in gold mining reported insufficient monthly income to sustain their livelihoods. Regarding the age of women in artisanal gold mining, it was established that most women were aged between 30 and 49 years. This agrees with ILO/IPEC (2006), which established that most of the gold miners had an average age of 31.3 years.

## **Activities of Women in Gold Mines**

This study established that most women in Macalder artisanal gold mines were involved in goods and service delivery. Women were also involved in crushing, washing, panning and separating using mercury. A small percentage of women participated in artisanal gold mining through the purchase of gold which they sold to other markets at high profits. These findings agree with Amutabi and Lutta-Mukhebi (2001), who

established that women who owned mining rights were very successful in the business. Similarly, Verbrugge (2017) observed that men and other family members use witchcraft to harm women who are successful in the mining business. Women often work on a part-time basis at artisanal gold mines and occupy roles such as service providers and cooks (Wasserman, 1999). Further, Hinton et al. (2003) argued that women predominantly participate in activities such as transport of the ore, sorting, washing and sieving. This agrees with Akabzaa and Darimani (2001) who observed that women participated in all aspects of gold mining, processing and marketing. Additionally, Gueye (2001) found out that women did 90 per cent of mineral processing activities in Burkina Faso.

## **Challenges to Women's Participation in Artisanal Gold Mining**

Low remuneration was cited as the main challenge facing women in Macalder gold mines. This agrees with IGF (2018), which established that the lack of women's participation in critical stages of mining, such as deep excavation, gives men an opportunity to have full control over finances, leaving women with no option but to accept the little payment from other odd jobs offered to them in the mining areas. Eftimie, et al. (2012) observed that women who were involved in the hauling and processing of gold in Ghana earned 60 per cent less than men involved in digging. Further, the authors stated that 80 per cent of women's profits from washing go to male buyers. Moreover, Verbrugge (2017) found out that low remuneration for women working in the gold mines drove them to prostitution in their quest to earn a living. Cultural beliefs were also cited as a major challenge for women seeking to participate in mining activities. This concurs with Lawson (2016), who observed strong traditional beliefs that deep excavation is only reserved for men.

Further, Malpeli and Chirico (2013) found that women are not allowed to go underground because of traditional reasons related to superstition. Women are also exposed to health risks while working in the mines because of the nature of the activities that they participate in. In a similar study, Brain (2017) argued that female miners in South America were relegated to low-paying activities that we're exposing them to danger. Additionally, Chakravarty (2001) observed that in most traditional societies, women are at the bottom of the family order regarding comfort, rest and nutrition, increasing their vulnerability to ailments. Similarly, Lu (2012) asserted that women suffer from fatigue because of the physically demanding activities in the mines and are prone to health issues such as skin irritation and lung disease due to the dust from the ore-crushing process.

Domestic responsibilities placed on women also limit their participation in artisanal gold mining activities. This is in agreement with Oduro and Van Staveren (2015), who found out that domestic responsibilities took most of the women's time, thus limiting the time and energy they could spend on mining activities. Sexual exploitation is also rampant in the artisanal gold mines. Some women engage in sex with the miners so that they are given priority when the mine is being cleared and also when the miners want their ore crushed. The results concur with Kelly et al. (2014), who established that women were engaging in sex as a bargaining tool which exposes them to sexually transmitted diseases.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

**Conclusions:** The main activities of women in artisanal gold mining are mainly in processing, service provision and, to some extent, marketing. Cultural norms and societal beliefs limit their participation in the digging and excavation of the mineral. Women of all age groups participate in artisanal gold mining in Macalder, but the level of participation decreases with an increase in age. The most active age is between

18 and 49 years. Several challenges limit women's participation in artisanal gold mining, including low remuneration, cultural bias, health risks, domestic responsibilities and sexual exploitation.

**Recommendations:** The study recommends formulating and implementing policies that recognise and safeguard the interests and contributions of women in artisanal gold mining. Women should also be provided with protective gear to reduce the health risks from gold processing. Public education on the dangers of using mercury in the separation process, engaging in sex to gain favours, and the need to have savings and investment plans should also be carried out. Alternative employment opportunities should also be available to cushion women who can't earn enough from artisanal gold mining.

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