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### The Economic Benefits of Quarry Stone Mining Activities to Women from Kwa V, Kirinyaga County, Kenya

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#### **Abstract**

This study sought to investigate the economic benefits that women derive from the small-scale quarry stone mine at Kwa V, Kirinyaga County. The research used a mixed-methods approach which both qualitative and quantitative data were collected and analysed. Data collection was carried out from a survey of 100 informal female quarry workers. Data from open-ended questions were analysed using content analysis to identify emerging themes. Quantitative data were analysed using descriptive statistics. Results showed evident variation in the number of days women work at the stone quarrying between rain and dry seasons. There was evident variability in the income women derive from quarrying between seasons. The activities women engage in the quarrying ranged from blasting stones to crushing stones to ballast. Income derived from informal quarrying was invested in various ways, namely, building a financial base through participation in women's chamas, table banking, investing towards access to lease land for cultivation to diversify income assets, purchasing physical assets, investing in human capital, for instance, education of children, to meeting basic day-to-day needs. This study's findings have important implications to public health interventions required to support informal female quarry workers, particularly given that most of these lack access to quality health care to mitigate health risks associated with stone quarrying.

Key Terms: Economic benefits, livelihood, quarry stone mining

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#### Introduction

In the globe today, there has been witnessed increasing numbers of women working in the quarries and mineral extractive sectors. According to AggNet Foundation Report, more women have had no option but to venture into an activity that had been ascribed to the masculine gender. The report cites that many women are already making their mark talk about opportunities and attractions. The entry of women in quarrying has been termed as 'new blood' where they are recruited into the sector, especially these days of increased technology. Women play major roles in the informal sector throughout the world, and currently, we are experiencing a trend of 'informalisation' of women's labour (UNIFEM, 2005). In India, women have been marginalised inform of quarrying and mining. The preliminary analysis of mining revealed that women are denied the same opportunities to work alongside their quarrying male counterparts. Mining in the world is generally believed to be carried out in India on a large-scale basis by major companies.

In the African continent, women in quarries find it challenging to carry out this mandate alongside mandatory parenting obligations. According to Biribwa Elizabeth in the thesis title Small-Scale Stone Quarrying: Its Contribution to People's Livelihoods, poverty is the ultimate cause of women engaging in quarrying activity. In Uganda, Biribwa contends that poverty is predominantly rural, where more than 70 per cent of the population lives. She recounts that East and Southern African countries have been noted as Africa's highest concentration of poor people who depend on subsistence agriculture as a source of food and income (Biribwa, 2006).

In Kenya, the stone is an important component in the construction of homes both in the towns and the rural areas and is often demanded in large quantities. The demand for quarried aggregates is enormous. Ndegwa, Oguta and Calvince argue that developmental activities in Kenya that involve the construction of homes, factories

and schools among other developments underpin the necessity of quarrying as an activity in the country thus making the quarrying and aggregate production industry a major player in the important role of steering the nation's economy through the provision of essential building materials and providing employment opportunities (Ndegwa, Oguta, & Calvince, 2003). In Kirinyaga County, where the study was conducted, stone excavation has been identified as the only alternate engagement for women so to be able to provide for their families and the alternative source of income for the local population in Kwa V area (Mburu, 2014). Local women from the area and the surrounding areas have become regulars in the Kirinyaga sites in the last two decades. Contrary to the norm, women make up almost half of the population of the workforce in the quarries. Today, women participate in various positions and largely depend on the sites for their livelihood.

Kwa V area has one of the poorest populations in Kirinyaga County. Besides subsistence farming, quarry mines provide alternative livelihoods for people from this area, especially women. There is need for data on the health risks and negative socio-environmental impacts of mining on women's that can inform measures to address the barriers that hinder efforts to ensure guarry mines do not jeopardise the social and environmental sustainability. This study on quarrying by women is evidently happening, not only in the study area but in many other places in the Republic of Kenya. Changes in the social structure in contemporary times have seen most of the women become the sole breadwinners of their families. Unfortunately, the circumstance in the employment and economic sectors has not shifted to adjust appropriately to accommodate them. The entrance of women in employment fields such as stone quarrying is clear evidence and representation of the unappreciated and discriminated image of the female gender. The research looks to explore and extrapolate the true range of women's plight in the realm of employment. Specifically,



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the study strives to discuss women's participation and contribution to the sector influences their upkeep and sustenance. As well, the investigation sheds light on the capacity of the sector to improve the lives of women who have limited access to entrepreneurial incentives, unlike their male counterparts. Mburu, in his study, justifies that stone excavation has remained an alternate means of livelihood, and most women are deeply in it (Mburu, 2014).

The underlying problem in this study is the worrying rate at which women are engaging in quarrying tedious activity for the sake of managing family's basic physical needs of food and shelter, despite exposing themselves to health risk and negative environmental impact. Women in most parts of the country have turned out to be the sole breadwinners of their families, especially where husbands have resorted to alcoholism. It is justified that women who are single parents have to work to provide for their families. According to a number of random searches in online peerreviewed databases, the growth and development of artisanal small-scale mining in third world countries more so, sub-Saharan Africa is in up-rise. Rural women who are not professionally skilled in most cases have the propensity to work at the quarries, thus reducing their wellbeing. The crushed stones produce a high concentration of dust, thus exposing the workers to health risk. The health condition may worsen where the workers are ignorant of these risks and do not use protective clothing. Studies have shown that quarrying has a negative environmental effect. Quarrying in Kenya has been taken as the creation of an alternative source of employment. However, there exists an evident shortage of literature, which addresses the plight of the ever-increasing population of the female gender on stone quarrying sites in developing nations. Dambov, Stojkoski and Kostoski, in Advanced Modern Techniques for Exploitation of Dimension Stones reasons that the agitated technology in sub-Saharan Africa has not availed much fruit as people cannot afford the cost of the equipment (Dambov, Stojkoski, & Kostoski, 2013).

The other problem is that most scholars have consistently avoided addressing the issue of the shifting gender roles within the industry. Instead, they have focused on digging activities, put emphasis on male miners, and at the same time excluded women who have been largely participating in non-digging practices such as food vending and transportation within the sites. In Kirinyaga County where the study was carried out, although quarrying has been taking place over decades ago, much has not been done to find out the benefits that women derive from the quarrying activities in order to earn a living, again, there is lack of monitoring of the workers (women in this case) condition in the quarry mines by the government agents, leading to negligence of the quarry workers in the area under study. This necessitates this study to be carried out in order to inform the relevant authority and other policymakers on the hazards relating to health and environment that these women face as they do quarry in the said area in order to earn a living.

#### LITERATURE REVIEW

#### **Quarrying in Kenya: Definition and Overview**

Quarrying is referred to as a process of removing sand, rock, gravel or other minerals from the surface of the earth so as to use them to produce construction materials or other uses. Ming'ate and Mohamed define stone quarrying as a form of land utilisation method concerned with the extraction of non-metal and non-fuel minerals from rocks (Ming'ate, & Mohamed, 2016). Majorly the type of activity under quarrying in Kenya is the extraction of stone. This activity is a very significant one in the country under the informal sector or popularly known as the Jua Kali sector. It involves a number of stakeholders that include landowners, quarry owners, concession holders (who lease land and extract stone for sale) and quarry workers who constitute both the skilled and unskilled.

The quarrying sector in Kenya is believed to employ over 40,000 workers nationally, where in Nairobi alone, it employs 10,000 people (Asher, & Sam, 1999). The country has a very great demand for stone because of the ever-

108



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growing construction industry, and stone from mechanised quarries is in high demand. Many of these quarries are found in Juja, but recently those that serve Nairobi (the Ngong division of Kajiado district, approximately 13 kilometres southwest of Nairobi) have been surveyed, and according to Asher and Sam (1999) the results have revealed that the local stone reserves can sufficiently supply stone for the next 50 years.

#### Women's Participation in the Stone Quarrying Activities

Research shows that small-scale mining has grown across the globe and continues to provide employment opportunities to the surplus population (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF, 2017). At present, a significant portion of the world's population depends directly on the income generated from the sector. Lahiri-Dutt and Macintyre (2017) estimate that about 40.5 million people engage directly in activities that relate to the surveying, excavation, and sale of mine product such as stones. Another 150 million relies on the industry for sustenance as it helps in income generation. Significant still is the role played by women who make up about 30% of the quarrying workforce globally (International Institute for Sustainable Development, 2018). In Africa, women make up about 50% of the workforce in artisanal and small-scale mining. Still, in some isolated cases, (Guinea, in West Africa) the proportion of women in the industry accounts for almost 75% of the entire population (Macintyre, 2017). Often, their contribution goes unacknowledged, but women have become a fundamental part of the sector in recent years. Safa (2018) attributes the lack appreciation for their effort to the mostly stereotypic historical and cultural elements, which continually shelve women, their ambitions and aspirations to participate in the industry in an equal capacity as their male counterparts.

According to Hinton et al. (2004), women's direct engagement in the ASM varied throughout the globe. Particularly, in Asia, women comprised less than 10% of miners, while in Latin America, the proportion of women

working in ASM averaged around 20%. Notably, Africa incorporated the highest percentage of female artisanal miners in the world, with an average of between 40% and 50% (Hinton et al., 2004). Hinton et al. (2004) further suggested that as the level of mechanisation and scale of mining escalated, women engagement in quarrying practices declined. Hence, women are likely to be more engaged in small family activities, where quarrying proceeds augment other incomes. Further, the inability of accessing resources has largely contributed to the incapacitation of female miners to invest in technology and suitable mining tools to increase efficiency in their business. Therefore, most women participating in smallscale quarrying utilise rudimentary tools such as pickaxes, hoes, shovels, and chisels, in addition to labour-extensive activities like breaking, digging, and carrying stones by hand. Essentially, according to Hayes and Perks (2012), even though this job is associated with extremely poor, less educated, unemployed, and landless populations in marginalised areas, it offers a real, and in the short term, a worthwhile source of income for women in Kenya, particularly in Kirinyaga. Besides, small-scale stone quarrying requires little lead time or advance investment; hence, it has a notable potential to generate quick economic returns (Hayes, & Perks, 2012).

Undoubtedly, Ghana offers a significant platform for understanding the operation and development of the industry in the world. In comparison to other nations that have yet to legalise operation in the sector, Ghana enables licensed operation within the sector in 1989 (Hilson, 2006) through the enactment of the small-scale gold mining law. The initiative led to the growth of two camps within the sector; the register and the unregistered. However, some of the mining enterprises could not meet the government's directives and consequently began operating illegally. In Ghana, the unregistered mining companies are referred to as the *galamseys* meaning *gather and sell them*' (Andrews, 2015). Interestingly, women make up a large portion of the workers in illegal operations. According to Yakovleva (2007), women made up more than half the population in



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Ghanaian galamseys. The trend has been replicated in other countries as well with women opening up to participation in the ASM industry.

Moving on, women's invisibility has exposed in many dimensions a plethora of issues concerning them that only a few scholars have covered in their investigations. The primary objective for the development of the artisanal small-scale mining is to facilitate the growth and development of the low-class community. Further, the sector helps avail employment opportunities for the surplus labour force, which is a big challenge in the developing world. According to Cotter, lack of proper planning for the female workforce has delayed development in most developing nations and more so, in sub-Saharan Africa (Cotter, 2017), McGinn, Ruiz Castro, and Lingo add that the attitudes, perception, and the lack of urgency in dealing with woman issues have contributed significantly to the delay (McGinn, Ruiz Castro, & Lingo, 2015). Similarly, Mihaila (2016) attributes the failure of the government of these countries to respond adequately is the blatant discrimination level against women on the daily. Investigations on the ASMs should strive to show women's potential and how it could influence their lives positively.

It is almost impossible to avoid emphasising some of the challenges women face while discussing the scope of women's participation in stone quarrying activities. According to Mukhopadhaya and Lahiri-Dutt (2014), digging is one of the most lucrative roles in mining sites. Equally important is the eventual sale of the stones upon digging, crushing, cutting, and sometimes shaping (Lahiri-Dutt, & Macintyre, 2017). The two stages are commonly referred to as the first and the last contact activities. Interestingly women are barred from participating in both activities save for the few isolated cases where some gain access to the pits or engage with buying customers (Weldegiorgis, Lawson, & Verbrugge, 2018). The undermining factors such as the inability to own land or related mineral resources, notwithstanding women rarely participate in the operation of quarrying machinery or even

gain access to the pits (Macintyre, 2017). Andrews (2015) observed that this happens even in instances where women own land or have a quarrying license.

Further, cultural edicts and perceptions erect unnecessary barriers for women in this industry as the larger society views stone quarrying as a 'man's work'. They prohibit women from engaging in physically demanding roles such as digging or operation of machinery in the quarries. According to Lahiri-Dutt (2012), mining acquired the male image and narrative in the industrial era when people perceived it as a perilous, strenuous and hazardous endeavour and as such, did not suit women. Worse yet some cultures consider these type of women 'loose' and perceive them as 'unclean'. Their societal images contribute to their exclusion from the lucrative roles in the quarries as the employers have a predetermined view of them. In other cultures, women are thought to bring bad luck and as such are not needed near the digging area.

Numerous studies show that women's' presence in the digging pits is heavily disputed. Regardless of the reason, most employers had rather have them operate outside the pits than inside. Consequently, the male miners who access these significant areas receive all the publicity and recognition while women, despite their immense contribution to the outside remain at the periphery of things (Visaya-Ceniza, 2015). Their participation outside the quarry digging area goes unnoticed and undocumented (Ata-Era, (2016). In Kenya, women put up 'kiosks' near stone quarries to provide food and drinks to the mining workforce (Kinyanjui, 2014). In addition, they provide other services such as laundry and other forms of cleaning to their male counterparts in the quarries (Waweru, Njoroge, & Adimo, 2018). For a long time, women have provided sex and nightlife entertainment for men working in these kinds of setting. In most instances, most of the workers live far away from their homes and cannot afford to commute on a daily basis. The overriding factors in this subject are the causes or better yet reasons for their increased participation in the small-scale stone quarrying sector.



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Yet even within their participation, women still encounter myriad challenges that hinder their full involvement in the economic activity. According to the International Institute for Sustainable Development (IISD, 2018), women face more impediments to participation due to limited access, control, and use of productive land and other resources such as finance and legal authority in comparison to men. While their male counterparts can easily claim entitlement, women have to depend on the limited employment favours granted to them by the local landowners (Safa, 2018). In Tanzania, for instance, extant imposing traditions deny women access to legal authority and finance, which limits their capacity to engage in any form of entrepreneurial activities. Specifically, the lack of ample finances makes it difficult for women to invest in the technology and equipment required to initiate a successful mining business. Worse yet, the nation's policies for land ownership or business operation do not favour women and discriminate against them openly. The main impediment for women in Tanzania remains the constraints and inequities involved in access, control and rights in the participation in economic endeavours.

#### **METHODOLOGY**

The study applied a mixed-methods design, where both qualitative and quantitative methods were used to collect and analyse data. The study was conducted at the Kwa V area in Kirinyaga County, about 98Km from Nairobi city. The research worked with village heads, community health workers to generate the list of households in Kwa Village, and also the list of workers at the stone quarry. This list comprised the sampling frame and proportional sampling of participants. The target population in the proposed research was women who work in the quarries at Kwa V village where the quarry is located. A random sample of 150 women was drawn from all the women who work in Kwa V guarries. A guestionnaire with both open-and-closed ended questions was used in data collection. To ensure the reliability and validity of the data collected, the researcher conducted a pilot using 15 women from a stone quarry

around the Kwa V area. After the respondents have filled the questionnaires, the researchers ran the dummy data, check if respondents had difficulties responding to questions, and / or are providing responses consistent with researcher expectations. Afterwards, the instruments were revised as necessary ready for administration with the respondents from the proposed study site. Descriptive statistics (frequency tables, frequency graphs), as well as mean, standard deviation, and range, were used to analyse quantitative data Content analysis was applied in analysing qualitative data and summarising themes coming from the participants.

#### FINDINGS AND DATA ANALYSIS

### Economic Benefits women derive from working at Kwa V stone quarry

The economic benefit of working at the quarry was one of the primary objectives of the study. Quite a number of questions in the interview sought to establish the influence that the quarry activities had on the living standards of the women, for instance. As expected, the women dedicated fair shares of hard-earned incomes towards maintaining their households. The claim is consistent with the findings reported in the previous section, which demonstrated that the largest portion of the sample comprised single, separated, divorced, or widowed women. This implies that most of the women/ladies working at the quarries are the breadwinners of their families.

The quarry mines in Kirinyaga constitute and contribute fairly to the region's economic basket. The investigator established that they provide much-needed employment to the local population. Most importantly, the mines provide alternative employment opportunities for hundreds of women in the local villages. The researcher on this question sought to identify the most prevalent activities that the larger populations of female workers engage in at the mines. To achieve this, the researcher asked the interviewees to reveal the nature of the work activities they do at the Kwa V mines. The interviewer recorded a range of activities throughout the session which includes



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crushing stones/ballast, arranging/sorting stones, stone ballasting, pushing wheelbarrows, loading ballast/stone/quarry wastes/hard-core lorries, emptying soil from quarry pits/holes, stone smoothing, and measuring ballast using a wheelbarrow. Further, other interviewees noted that they engaged in sales activities such as selling/broking stones/ballast. The findings show that the larger portion of the female population working at the quarries engaged in menial jobs such as crushing, sorting/arranging stones/ballast, and loading ballast into lorries/trucks. Most of the women indicate they normally crushed stones ballast, loaded them into trucks and pushed wheelbarrows to earn a living at the quarries. Table 1 below shows the distribution of work activities across the sample population in the survey.

Table 1: Activities that participant engages in at the quarry (N= 100)

l= 100 <i>)</i>			
Work Activities at the quarry	Frequency of mention		
Crushing stones/ballast	59		
Arranging stones	52		
Loading ballast in lorries/trucks	47		
Selling stone/ballast			
Loading ballast in lorries/trucks	45		
Breaking ballast	37		
Pushing wheelbarrow	33		
Stone ballasting	32		
Smoothening stone	32		
Loading hard-core	23		
Loading quarry wastes onto lorries	23		
Emptying soil from quarry pits	21		
Broker selling ballast/stones	21		
Measuring ballast using a	18		
wheelbarrow			

Source: Author's survey data (2020)

The researcher further wanted to investigate how the women spent the money they earned from their employment positions at the quarry. Throughout the

session the women mentioned various ways through which they used their incomes including buying foodstuff, paying school fees, Chama/merry go round, house rent, buying books, leasing land for farming/quarry, settling debts, loan, buying clothes, and buying medication. The findings show that most women invested their incomes in *Chamas*/merry go round. Further, quite a number of women revealed that they used the money they earned to pay school fees, buy food, and pay house rent, and for medication. On the other hand, fewer women indicated that they used their earnings to purchase household furniture or books. Table 2 below illustrates income use across the sample.

Table 2: How female quarry workers spent /invest income from stone quarrying (N= 100)

Income Use	Frequency of mention
Chama/merry go round	71
Paying school fees	62
Buying food	59
Paying House rent	54
Medication	41
Leasing quarry	21
Buying clothes	21
Settling debts	21
Leasing land for farming	15
Loan	13
Buying house furniture	11
Buying books	1

Source: Author's survey data (2020)

Additionally, the researcher requested the interviewees to reveal how they had used their earnings in the last six months. The responses to this query were consistent with those provided for the previous query. Most of the interviewees revealed that they had used their earnings to update their Chama/merry go round payments. Still, a significant population revealed that they used their earnings to pay school fees, buy food, and to pay rent. In the course of the session, the researcher observed that others used their earnings to make distinct purchases such



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as buying phones, TV, goats, hammer, compound fencing, NHIF registration, leasing land for farming.

The quarrying site, like every other labour sector, has the potential to influence the living standards of the population that directly involves in it. The women participating in the interview delivered narrations of the most significant changes they have experienced in their lives since they began working at the mines. Indeed, the mines provide informal employment offering negligible returns in comparison to other occupations. The larger portion of the population does not hold the sector in high regard and view it as a 'job for the uneducated'. The industry takes in workers regardless of their educational background, implying that it does not attach much importance to academic qualifications or individual intellect. One interviewee recount that she had nowhere else to go after dropping out of school and with nothing else to do or place to go, the quarry was her last resort. 'Alright let me say that I came to do this work since I didn't have anything else to do after I dropped out of school..." the interviewee further revealed that quarrying is a difficult job thereby making it a reserve for people with little or no academic qualification. The woman describes it as a tedious job and equates it to a mallet and is thus not for fainthearted.

The responses recorded from various participants reveal that the individuals working at the quarries have experienced considerable changes in their lives and households economically thanks to the quarry. This claim is informed by the challenges most endured prior to seeking employment at the quarry sites. They imply that the drive to look for work at the quarries hinged on past challenging experiences. Some women cited troubled marriages coupled with abusive partners that left them no option but to separate and bring up their children independently. Others cited a difficult childhood with absentee parents, poor backgrounds, and abusive parents/guardians. Still, other women confessed to having made serious mistakes such as getting pregnant while in school that led to their

current predicament. These participants offer that they joined the industry after delivery in a bid to fend for their children as they had been neglected by their family members. For this reason, one common theme arises within the female working population – hard work. About every interviewee mentioned that they had persevered and accomplished some of their dreams through hard work.

The depiction of personal experiences since joining the industry reveals that the quarry mines have had considerable influences on the women economically. Nearly every woman seems to attribute their capacity to provide basic human necessities for them and their families to the quarry. Indeed, most view the opportunity to work at the quarry as the ultimate redeeming factor in their lives. For most interviewees, their initial goal upon beginning work at the mines was to rent or build a house. One offered that:

Since I started working at the quarry, the most significant thing that has happened in my life is that when I started working at the quarry, I was not in a position to rent a good house and lived in as there was no toilet, so it was plastic and throw life. But as I continued to work at Kwa V, I have now been able to rent a permanent house with toilet facility."

Still, another said that: "so I immediately turned to the quarry, and decided to build my life. I rented a small room so that I could have a place to lie down after a long day of work."

Additionally, some women acknowledged the contribution to the Chama/merry goes round towards their economic advancement. Most indicated that years of commitment to paying *Chamas* helped them invest in significant projects that have elevated their lives considerably. Through the merry go round groups, the women have been able to pay



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college/university fees for their children and leased out land for farming and quarries to increase their income pools. Significant still, it has helped some of them move from renting houses to building homes in a matter of years.

Most of the women partaking in the study were single parents either, separated, divorced, or widowed and as such, fended for their families by themselves. A significant portion of these women grappled with the challenges of educating their children to follow the absence of their husbands. For this reason, paying education fees featured importantly among the major responsibilities they committed to in their lives. Some sourced funds for fees directly from their income at the quarry while others relied on the Chama savings. One offered that:

I had to work hard for the sake of my children and save in order to educate them so that in future they can live a better life than mine. Took them to school and paid fees as required and my firstborn is in High school, and because he performs so well, I trust that he will be able to join campus. I save school fees through Chama and borrow anytime that he is going back to school.

Similarly, the income generated through working at the quarry has presented the women with the opportunity to venture into alternative economic activities that enable them to increase their monthly earnings considerably. For instance, some women seek to increase their earnings by engaging in farming activities. The larger Kirinyaga area is an area that has great agricultural potential and thus, readily offers a new avenue for generating more earnings. Through *Chamas*, most women have been buying more livestock or lease more land for cultivation. One interviewee revealed that:

"I decided to buy a dairy goat so that I would save the money I used to buy milk and save more in the Chama in such a way that

after another one year I was able to buy a he-goat and because it's the hybrid type, people usually come for it to serve their goats for a fee."

The emergent theme in this scenario is the theme of economic empowerment.

The participants readily shared their feelings towards their achievements/changes from the beginning to the present with most attributing their continued prosperity to the quarry mines despite the challenging work conditions. Most women expressed their elation at being able to elevate their standards of living through working and saving. Besides, paying school fees, building homes, and leasing land many women noted that they were able to cater to crucial and far serious needs such as healthcare, which is a real challenge in rural Kenya. Quite a significant number indicates that working at the quarries has enabled them to acquire NHIF health care services. Significant still, they have been able to protect their households from infections due to drinking/using unclean water by treating the water first before consumption. Similarly, some indicated that they had managed to buy a sizeable water tank, which ensures their households, have water throughout and it is safe for drinking. Another interviewee noted that she used gas to cook since her son gets sick from inhaling smoke when she uses firewood for her cooking: '

'This change is most significant because I used to spend some money for my small boy's medication whenever he inhaled the smoke and now that we use gas for cooking, I don't spend much money in his medication."

Overall, the interviewees showed that the changes were largely positive and went a long way to improve their families' welfare and livelihood.



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#### CONCLUSION

The findings of the study have largely depicted small scale stone quarrying as a positive contributor towards the advancement of the broader Kwa V population. The mines were found to be essential to the growth of the individual worker and more so, those who lack sound educational background. Through the quarry, despondent school dropouts have been able to find much-needed employment, which is necessary for survival in rural Kenya. However, the study findings have also highlighted numerous cases of challenges that women working at Kwa V quarries encounter which included physical injuries, negligible income/returns and unfavourable work conditions such as lack of toilets and clean water at the quarry sites.

To the local population, Kwa V quarry mines provide the much-needed shift from abject poverty, which is a mainstay in the locality. In the interview session, most women revealed that they came from quite poor backgrounds

before working at the quarries. A considerable number of the interviewees indicated that they could afford a few luxuries thanks to their employment at the quarry. For instance, some revealed that they had built homes, educated their children and pursued other endeavours from the proceeds of the mines. Similarly, the questionnaire survey revealed that a significant portion of the sample population was able to start a small business using capital obtained from working at the quarry.

#### RECOMMENDATION

The study established the benefits and overall implication of the small-scale stone quarrying sector in rural Kirinyaga. The study recommends that the local government / NGOs should come up with a program of training women on how to operate businesses within this area in order to ensure the sustainability of the businesses that women may start as an alternative economic opportunity.

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