



Women Empowerment in Mining: A Case Study of Taita-Taveta County

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Abstract: To achieve sustainable development in the extractives industry in Africa and the world at large, requires appropriate empowerment of women in the sector. This will enhance attainment of UN SDG 5; gender equality and also aid in reducing poverty, building more inclusive, peaceful and prosperous nations. This study evaluates the level of empowerment of women in the mining industry with an emphasis of Taita-Taveta County. The study analyzed the challenges women face in the mining sector, their recommendations and suggestions of their empowered in the mining operations. Data was acquired through interviews and questionnaires whereby women respondents were identified through snow balling sampling methods. Desk survey, literature review and internet research were employed to explore the status of women empowerment in mining at a wider scope. Statistical data packages were used to analyze the data that was presented in pie charts, graph and map. Results indicated that 51% of the respondents have been in the mining industry for a duration of between 1-5 years. That shows the majority of women in the sector do not have long term expertise and experience and there is a felt need to empower them. Lack of finances and equipment was highlighted as a major challenge by a majority of women. They recommended that the government of Kenya should to put in place legislative, financial, academic, marketing and security mechanisms to enhance women empowerment in the mining industry in the County and country at large.

Keywords- empowerment, minerals, mining industry, women

1. INTRODUCTION

Sustainable development in the extractives industry in Africa requires the empowerment of women in the mining industry. A woman is the female gender of the human race, who incubates the seed of life, brings a child to the world and natures them to maturity.

A woman is a wife, a mother, a sister, a daughter, a friend and a companion. She holds the basic unit of family together. She is the fabric that binds together the family, community and the nation. She is the beam of light in her family, community, nation and the world at large. Empower a woman and you will have empowered the whole family, community, nation and the entire world.

What can humanity do without a woman? There is no life, development or fun without a woman.

From my observation, the societies that have empowered women have strong economies. The western world has empowered their women and is highly developed. Some African cultures degrade their women and such communities are observed to lag behind in development escalating poverty levels within their societies.

Women empowerment in the mining industry requires women to be fully empowered in research, education and operation along the mining value chain of geological discovery, exploration, mining engineering, processing, marketing, mine closure, recovery and recycling. Women should be empowered to comprehend the main mining sectors. Direct participation of women in mining varies within the world. Asia less than 10%, Latin America 10% - 20%, Africa 40% - 50% [15].

Women empowerment in the mining industry: -

- Provides women real-time visibility across the entire product and logistics process from the extraction stage to product delivery. The empowerment should also include provision of adequate security services to women along the whole of the mining value chain.

1.2. Background of the study

Women in mining dates back to historical times. Some famous historical women in mining include;

- i. Queen Cleopatra of Egypt whose reign started in 51 B.C., she owned emerald mines which are situated in Jabal Sukayt and Jabal Zabarrah near the Red Sea coast, east of Aswan, [8].
- ii. Queen Semiramis of Babylon quarried vast volumes of sand to build the great walls of Babylon in the 9th century (2,800 years ago), [13].
- iii. Queen of Sheba's gold mines are reputed to be located on the high Gheralta plateau in northern Ethiopia [22]. The Queen of Sheba took 120 talents of gold to King Solomon as a gift in the 8th century (2,700 years ago). This incidence recorded Old Testament in the book of 1st Kings chapter 10 verse 10, and 2nd Chronicles chapter 9 verse 9.

In contemporary times, at the international stage, there is Dr. Kathleen Altman, an American national, who led the list of 100 global inspirational women in mining 2016. She is the director of metallurgy and mineral processing in Roscoe Postle Associates company. Kathleen was then the first and only woman graduate with PhD in metallurgical Engineering from the university of Nevada, Reno (UNR). She has 38 years of experience in mining and she is a truly an iconic empowered woman in the mining industry.

In Africa Ms. Joyce Aryee, a Ghanaian made it to the top ten in the list of 100 global inspirational women in mining 2016. She was the former chief executive officer of the Ghana chamber of mines and the first head on African chamber of mines. She championed the transformation of the chamber which is the main minerals industry association in Ghana and promoted the mining industry as a sustainable source of income. For that, was awarded an honorary doctorate for her efforts by the University of Mines and Technology, [7].

In Kenya [25] is among the few women who have broken the glass ceiling in the extractives industry. Having excelled with a Bachelor of commerce, marketing and economics she was the chief executive of the National Oil Corporation of Kenya, a general manager in Petroleum Institute of East Africa (PIEA) and a marketing manager at Exxon Mobil. Mary serves as beam of light on the capability of an empowered woman in extractives industry.

Taita-Taveta County being a County endowed with abundant minerals, women have also ventured in the mining. Mrs. Makau is among the prominent women who have scaled into higher heights in the extractives industry as a miner, dealer and an investor in Voi. Lastly but not least Ms. Nduku, from Taita-Taveta County, was elected in April 2019, the vice chairperson of the Kenya chamber of mines. This is a testimony of the empowerment of women in mining in the County.

2. LITERATURE SURVEY

From ancient times women have been involved in the mining industry. Reference [41] expounds on Siculus, Diodorus a Greek historian who lived between 60 BC and 30 BC who documented on how women were inhumanly treated in the Egypt's gold mines of Nubia. That trend of insensitive treatment of women has persisted to the present times and this calls for women empowerment in mining so as to achieve sustainable development in the world.

In the Victorian era, in 1841 in Great Britain, Sub-commissioner Samuel Scriven visited mines at Staffordshire. He found women miners in trousers and he condemned them as unfit for marriage and being mothers. During the same time, three prominent newspapers in Great Britain, namely the Labour Tribune, Manchester Guardian and Daily News also castigated women for wearing trousers in mining operations. Women miners were also highly discriminated upon in the mining sector, more so they were paid about half the pay of their male counterparts [44].

In Australia, as late as in the 1960's women were barred by law from working in underground mines and the militant male dominated mining unions prevented them from working in mines above the ground. This applied to women scholars and professionals in the mining sector throughout the country, including those with degrees in engineering, geology and metallurgy. According to the [3], women were only allowed to work in teaching and research in the universities. In the 1970's, the wind of change blew across the country and women agitated for inclusion to every sector of the mining industry. To date 45% of the country's national work force are women with only 16% of them in the mining industry.

Currently, though China has over 6 million artisanal miners who constitute over 50% of the world's artisanal miners, women are not directly involved in the mining industry in the country. Women are legally prohibited from working in underground mines. They are only allowed to participate in mining sites in support services like cooking [14].

Even in the United States of America (USA) and in Canada, women in the mining industry has not yet broken the glass ceiling. Only 13% and 17% of the labour force in the USA and Canada respectively in the mining industry are occupied by women [42]. According to [45] Mexico is a classic example of a country that have embraced, mainstreamed and empowered women in the mining industry. This have been done by their

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adoption of new technology and strong support systems. Globally, [27] highlights that though 50% of the world population is composed of women, only 17% of the world's labour force in the mining industry are women.

In South Africa, women were forbidden by law from working in underground mines up to 1990's. The law was changed in 2002 and mining companies were obliged to have 10% their employees be women. That was in contrast to the year 2000 where only 2% employees in the mining industry were women. The country with an objective to correct the labour imbalance in the mining industry gives bursaries to young women to study courses in mining through affirmative action [28].

A report by [17], states that South Africa and Ghana have empowered their women in the mining industry through the aid of International Finance Corporation (IFC) and mining companies. Lonmin Plc in South Africa, has built women change houses and custom-built equipment for them while in Ghana, Newmont Gold involves women in decision making and mining operations appropriately.

Reference [43], in a report for International Institute for Environment (IIED), noted that Tanzanian women are restricted by traditional beliefs which criticize them from access and ownership of economic resources including mining aspects. This has greatly pulled women down in the mining industry in the country. The country's policy making mechanisms in the mining industry are biased and discriminative against women and thus disadvantages them from accessing financial empowerment to venture in various mining business and technologies.

Migori County, in Kenya, men comprise 92% of the gold extraction mining labour force, while 62% women labour force are in the gold processing. This is points to a clear division of labour along gender lines. (Namasaka,2018). Reference [6], quoted the UN Women Country director Zebib Kavuma, who said that women in mining Kenya lacks adequate knowledge and finance, during the Kenya mining forum. The forum had over 200 participants who were evaluating the investment opportunities in the mining sector in Kenya. Ms. Kavuma urged that the mining law in Kenya be implemented equitably so as to promote gender parity.

Kenya has embraced empowerment of women in the mining industry through development of relevant mining sector education courses in tertiary intuitions such as, Jomo Kenyatta University of Agriculture and Technology and Taita-Taveta University. In addition to that, development partners, for example DAAD, has facilitated the empowerment of women in mining in Kenya and other African countries, by initiating Centers of Excellence in Mining, Environmental Engineering and Resource Management (CEMEREM). DAAD awards scholarships to women to advance their education and careers in the mining sector. The government has also constructed Voi gemstones value addition center in Taita-Taveta County to support the gemstones value addition chain in the County.

2.1. Theory

Empowerment of women in the mining sector in Taita Taveta County enhances wholistic development of women in the mining industry in the County.

2.2. Research study objectives

1. To determine whether women in mining in Taita-Taveta County are empowered.
2. To investigate the challenges the women in mining in Taita-Taveta County encounter.
3. To explore the mitigation measures of the said challenges and get the women's recommendations on women empowerment in the mining sector in the County.

2.3. Research study indicators

The research study indicators in this research include, but not limited to;

1. Conference concept paper.
2. Research study paper.
3. Filled questionnaires.
4. Field note books.
5. List of people interviewed and consulted during the study inclusive of their contact details

3. RESEARCH METHODOLOGY

Table 1 depicts the research design and methodology.

Key steps	Study activity	Methodology	Tools	Assumptions and remarks
Step 1	Project	Snow balling sampling method was employed to identify the respondents.	Project proposal, questionnaire, report lists of project area spread by location and sector, maps,	The survey was designed to sample the women in mining industry in Taita-Taveta County.

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	sampling	The project sample was acquired based on pre-set criteria to ensure coverage and representation of women in mining in Taita-Taveta County.	internet data and past newspapers extracts citing women empowerment in mining. Laptop, camera and field note books.	It was assumed that women involved in mining activities were willing to give information during field trips, site visits and interview periods.
Step 2	Data collection methods	Desk surveys and literature review, mass media coverage, internet research on online journals and documents on women empowerment in the mining industry, Taita-Taveta University library, mining sites visits. Questionnaires were filled by women in mining in Taita-Taveta County.	<ul style="list-style-type: none"> • Internet. • Questionnaires • Field note books • Laptop • Camera 	Data was collected from the mining sites as indicated above. Data collected documented the empowerment of women in the mining sector in Taita Taveta and met the objectives of the research study and the challenges and assumptions were as anticipated above.
Step 3	Data analysis	Data analysis was done through statistical data analysis methods	Statistical packages	Data analysis highlighted the issues of women empowerment in the mining industry in Taita Taveta County.
Step 4	Data presentation	Data presentation: Pie charts, graph, and map. Study report CEMEREM conference 2019	Research study paper	Study report was uploaded in the CEMEREM website.

4. RESULTS AND DISCUSSION

4.1. Study Results

4.1.1. Duration of the surveyed women in the mining industry in Taita-Taveta County

The results of this study found out that 51% of the women involved in the mining activities that were surveyed in Taita-Taveta County had ventured in the mining sector for a period between 1-5 years, and 14%; 6-10 years, 6%; 11-15 years, 14%; 21-25 years, 6%; 26-30 years and 9% for over 30 years as shown in the figure 2 below.



Fig. 2: Graph illustrating the duration the surveyed women have been in the mining sector

4.1.2. Challenges faced by surveyed women in mining sector in Taita-Taveta County

Among the stated challenges by the women surveyed were as follows; bureaucratic red tape in issuance of visas and mining licenses 5%, women being conned of their minerals 3%, discrimination against women in the mining sector 4%, human-wildlife conflicts 1%, insecurity 8%, lack of capital 11%, lack of mining equipment and machinery 12%, lack of health facilities 1%, lack of mining protective clothing 4%, lack of adequate training in mining 7%, lack of water 15%, poor housing 7%, poor market access 9%, poor transport facilities 8%, sexual harassment 3% and tribalism 1%. See figure 3 below.

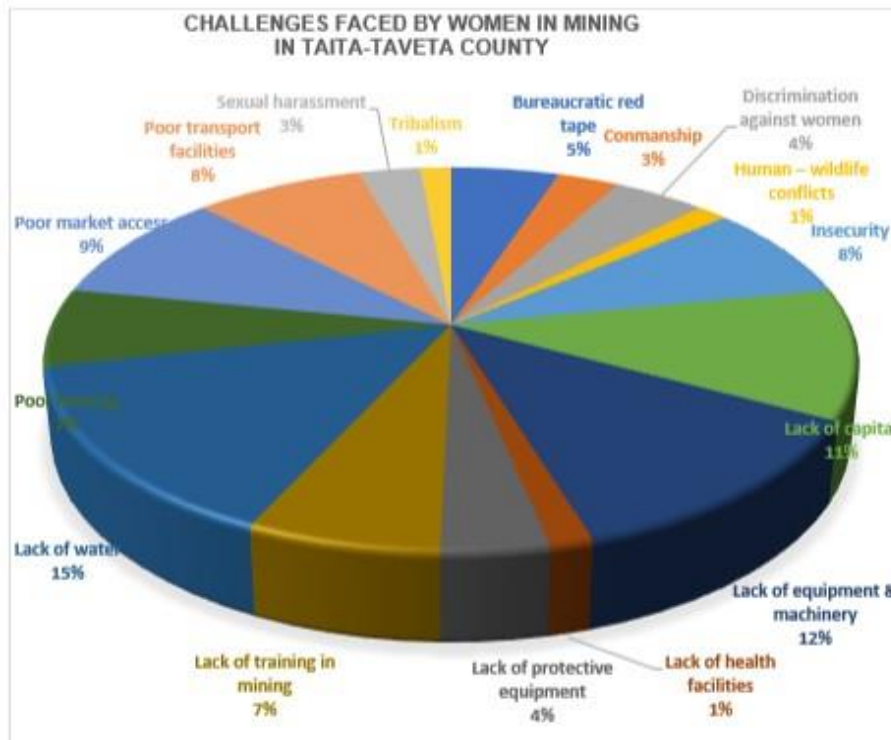


Fig. 3: Pie chart illustrating the challenges faced by surveyed women in mining sector

4.1.3. Recommendations given by women in mining sector in Taita-Taveta County

The surveyed women offered the following recommendations to overcome the challenges they face in the mining sector within the County. These are bureaucratic red-tape eradication 3%, provision of mining equipment and machinery 17%, eradication of discrimination against women in mining sector 3%, financial support 16%, good housing 5%, human-wildlife conflict resolution 2%, marketing facilitation 10%, provision of medical facilities 2%, security enhancement 10%, training in mining value chain 10%, transport facilities improvement 9% and provision of clean and adequate water 10% as illustrated in figure 4 below.

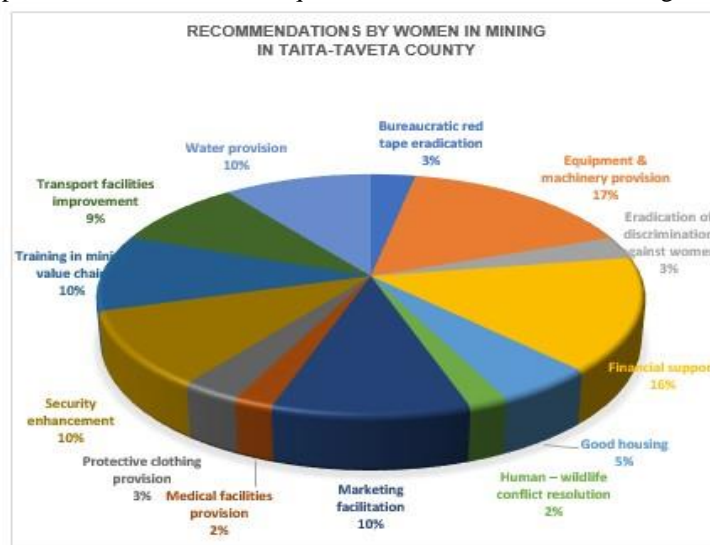


Fig. 4: Pie chart illustrating the recommendations given by women in mining sector to overcome the challenges they face

4.1.4. Empowerment suggestions given by women in the mining sector in Taita-Taveta County

Sampled women in the mining sector in the County outlined some suggestions which would enhance their empowerment in the mining industry. They include; eradication of bureaucratic red tape in issuance of visa and mining licenses 4%, provision of mining equipment & machinery 21%, eradication of women discrimination in the mining sector 2%, financial support 24%, good housing 5%, market facilitation & access 16%, provision of working protective clothing 5%, transport facilities improvement 1%, security enhancement 5%, training in mining value chain 17% and provision of water 1% as demonstrated in figure 5 below.

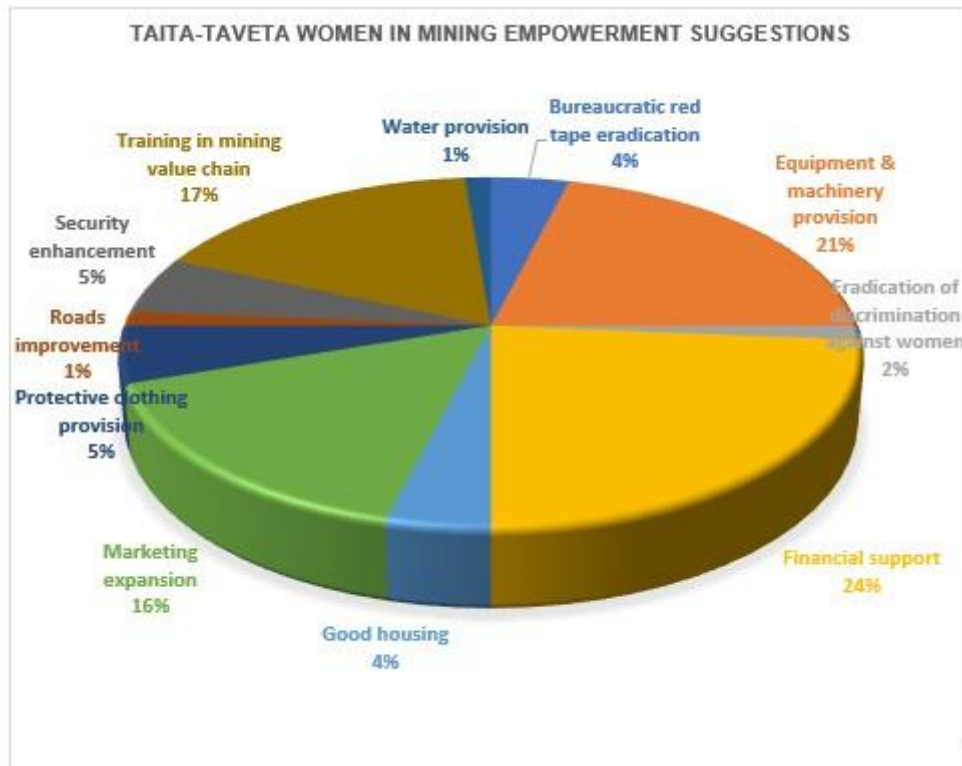


Fig. 5: Pie chart demonstrating empowerment suggestions outlined by women in mining sector

4.2. Discussion

Based on the literature review this research study established that women all over the world from ancient days to present times have not been adequately empowered in the mining industry. In the countries reviewed, women empowerment in the mining industry is a work in progress from China, Canada, USA, and African countries. Very few women have broken through the glass ceiling in the mining sector in the world. The study revealed that women who venture in the mining industry globally from ancient to contemporary times face almost similar challenges and barriers in their line of mining operations. Some of these challenges include social, cultural and traditional barriers, discrimination, insecurity, sexual harassment, low pay and poor working conditions among others.

In Kenya, the [21], being the major legislative guide in the country, is completely silent on women empowerment in the mining industry. Other sectors in Kenya has affirmative action anchored in law. For instance, there are health programmes that support and are favourable to women such as free maternity health care services and free medical care for children under five years. The Ministry of Education also enrolls girls and women in institutions of higher learning with a lower threshold than for men. In addition to that, the Kenyan government offers financial support to women through funds that are tailor made for women entrepreneurs. Lastly but not least, in Kenya, gender equity is anchored in the constitution through the 2/3 gender rule, [21]. *It is therefore necessary to empower women in the mining industry in the country through affirmative action in legislation, academia, marketing exposure and financial facilitation.*

The field study research was undertaken among the women miners, dealers and gem cutters in Voi and Mwatate sub-counties in Taita-Taveta County. 11% and 12% of the women sampled during this study highlighted that lack of financial support and lack of mining machinery and equipment respectively, were a major challenge in their mining operations. This leads to lower output of these women in their mining activities. The Kenya government facilitates the agricultural sector, National Youth Service and the sugar industry among

others with funds and machinery. It is advisable for the government to explore ways and means of facilitating the empowerment of the women in mining too with enhanced access to funds and machinery. This will unlock the vast potential of the mining industry in the County and empower women in mining substantially.

Though only 5% of women identified bureaucratic red tape as a challenge to them, the ripple effect of unnecessary delay of processing visas, mining licences and other statutory documents like the NEMA licences among others is felt by many women throughout the mining industry. A woman whose visa is delayed may miss a vital market opportunity to market her minerals. That in turn halts or slows her mining activities because of lack of capital to pay her workers and also to purchase more minerals from dealers. On the other hand, delayed mining and dealers' licences introduces unnecessary conflicts with law enforcement agencies as has happened several times to some women in Taita-Taveta County. To enhance the empowerment of women in mining in the County, bureaucratic red tape in the mining industry needs to be eradicated.

Social issues like tribalism and discrimination against women in mining that was reported by 1% and 4% of the women respondents in that order, requires a multi sectoral approach to address. For women to be embraced and mainstreamed in the mining industry equitably, calls for attitude change within the sector. That change may be achieved through sustained mobilization and awareness creation of the need and benefits of fully embracing women in the mining industry. The drivers of that change are the women leaders, traditional, cultural, political and religious leaders, mining policy makers, law enforcement agencies, National and County government officials, journalists, institutions of learning, scholars, and civil society organizations to support and empower women in the mining sector in the County. That will shape the opinion of the society and enable women in mining to progress and thrive in the sector favourably.

The education system in the country requires an overhaul to ensure gender equity is incorporated throughout the entire system. Young girls' scholars should be encouraged and fully supported to pursue mining related courses to create a strong knowledge, skills and expertise base of women in mining. That will facilitate the removal of the barriers of women discrimination not only in the mining industry but in the society at large.

Surprisingly, this study established that discrimination against women is done even by women miners against their fellow women in the sector. In women owned mines, allegations of cases of indecent search of women workers were made at Baraka mines in Mkuki area in Mwatate Sub-county, as reported by [30] in The Nairobi newspaper. In another mine at Kasigau ranch, some women informed the researcher that they had experienced routine indecent searches which were common practices while working for a lady miner. The researcher witnessed a case of a woman mine supervisor insulting fellow women miners because she presumed to be in a position of power and authority over her women colleagues. Interestingly, at no time did she direct her outburst of insults at the men miners who formed the majority of the labour force at the mine at Kasigau.

15% and 7% of women identified lack of adequate water and good housing respectively as challenges affecting women in mining in the County. These issues should be tackled through legislation that should make it mandatory for mine owners to provide clean and adequate water, basic housing facilities and wash rooms that are women friendly in the mining areas. In the mining areas that were visited during this study, most of the women were living in appalling and pathetic conditions. Most of their houses were nylon sheets held together with sticks. Washroom were few and some were poorly constructed and maintained. Women narrated stories of how they are regularly forced to answer calls of nature and take baths in full view of peeping men.

The study noted that the women faced challenges of insecurity 8%, conmanship 3%, sexual harassment 3% and human-wildlife conflicts 1%. To address these challenges, competent law enforcement agencies should be easily accessible and available to them at all times. Some women miners highlighted that there are men who demand for sexual favours so that they may offer them technical services like minerals exploration, prospecting and marketing. These issues are setbacks to women hindering them from maximising their performance in the industry. 17% women identified training in the mining value chain as a mode of empowering them with relevant skills and expertise pertaining the mining operations.

Lack of health facilities and protective equipment were identified by 1% and 4% respectively as challenges encountered by the women in mining. Most mining areas in the County are found in remote areas far from established health facilities. From observation the mining areas requires well equipped mobile health facilities and ambulance services accessible at all times to attend the women miners. This will help the women miners to save time and resources in acquiring basic health services. In case of emergencies as it sometimes happens during mining operations, the ambulance service will timely take the women for medication to established health facilities.

In Kenya the [46], part XI, article 101 on protective clothing and appliances and the [21], part XI, article 178 specifies that all workers in Kenya including those in the mining industry should be provided with personal protective clothing in their respective occupations. However, that has not been done to the women working in the mines visited during the study. The women work under hazardous conditions as shown in figure 6 below. The ripple effect of exposing women to such unhealthy occupational conditions is felt at the workplace, in the family and society at large when their health is compromised. Women are the primary care givers and support pillars in the family and community.



Fig. 6: women working in the mine without protective clothing and an excavator in a mining site

The impact of their ill health is felt far and wide, and thus the health and wellbeing of women in mining cannot be over emphasised. Mine owners should comply with the law and provide women miners with protective clothing and equipment. Law enforcement agencies should ensure compliance and enforcement of occupational health and safety regulations within the mining sector.

8% of the respondents highlighted that poor transport facilities are a challenge in their occupation. This was witnessed during the field study survey. The earth roads to the mines were poorly developed and maintained, with no consistent means of transport hindering smooth transport operations of the women. 9% of the women identified poor market access as a challenge to them. Some women informed the researcher that they are not conversant with the gemstone market in the region and globally and that they require adequate market exposure. Due to their lack of the gemstone market trends, they sell the gemstones at very low prices. Women in mining needs to be empowered with appropriate marketing skills to enable them to understand the local, regional and global gemstones prices and enhance their gemstones sales negotiation skills and expertise. The marketing empowerment is bound to increase the women's income from their gemstones sales and empower them financially.

5. CONCLUSION

From this study it has become clear that the [21], requires to be reviewed to have an affirmative action of women empowerment in the mining industry in Kenya to emulate South Africa's inclusion of women in the mining industry in 2002 through legislation. In the mining areas visited, the study revealed rampant disregard of the Mining and Occupational health and safety Acts and thus there is urgent need for law enforcement agencies to guarantee compliance with the law in the mining sector. The law enforcement agencies should enhance security in the mining sector so that the women would be safe, secure, and operate in an environment free of sexual harassment and discrimination.

The recommendations made during this study reveals the need for the government of Kenya to put in place legislative, financial, academic, marketing and security mechanisms to enhance the empowerment of women in the mining industry in the County and country at large. That will promote gender equality and empower women in the mining sector and bring down the barriers that hinders women from optimal participation in the mining industry.

Advocacy for the empowerment of women in the mining industry should be done and sustained consistently in a multisectoral approach involving all the relevant stakeholders in the mining sector. That will facilitate the attainment of 2030 UN Agenda of sustainable development goal number 5 on gender equality, targeting to end all forms of discrimination and all forms of violence against all women and girls in the world.

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