



## An Assessment of Access and Perceptions of Mererani Mines Surrounding Communities towards Social Services

*Elifadhili E. Mpehongwa*

[empehongwa@gmail.com](mailto:empehongwa@gmail.com)

Tengeru Institute of Community Development (TICD)

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### ABSTRACT

The existence of a mine in an area is expected to change the lives of surrounding communities through the provision of employment opportunities and basic services such as water, electricity, clinics/health centres, schools, and a road network. It's very unfortunate that the lack of essential social essential services is a constant challenge in many mining sites in Tanzania, and Mererani areas where Tanzanite is mined are no different. A study was conducted purposely to find out the access to social services in Mererani Tanzanite mines and the perceptions of surrounding communities towards those needs. A sample of 128 respondents (surrounding communities) were sampled for the study from the sampling frame of 693 community members in the Mererani township authority area. Both quantitative and qualitative information were gathered by using interviews, observation, and a review of available documents related to the subject matter. Data were analyzed using descriptive statistics. Findings show that Mererani mines surrounding communities accessed social services such as Health Services, Education Services, Electricity, Water supply, and Communication Services. The study also noted that surrounding communities have a negative perception of existing services. Therefore, the study concludes that the majority of Mererani mines surrounding communities have an access to some of the basic needs necessary for performing socio-economic development activities though they are not satisfied with the way they are handled thus possess negative attitude towards the services. The study recommends that there is a need to add other social services as needs detect while increasing efforts to improve the existing ones. The study also recommends the government, the surrounding communities and other development stakeholders to join their efforts in eradicating challenge of access to water in the study area.

Keywords: Access, Social services, perceptions, Mines, Surrounding Communities

### INTRODUCTION

Social services are a series of public services intended to offer support and assistance towards particular groups, which commonly include the disadvantaged. They may be provided by individuals, private and independent organizations, or administered by a government agency. Effective access to functioning and well-equipped social services like health, education, water supply, electric and others are a prerequisite to improving the quality of life and for promoting the well-being of all (Swantz, 1997).

Tanzania has considered the basic social services to be public goods which all citizens are entitled to enjoy great efforts are made to satisfy the basic needs of the people (Rweyemamu, 2001). Tanzania is endowed with a number of mining sites. Tanzanite mining site being the most famous due the fact that it is the only site which produces the precious gemstone known as Tanzanite. Tanzanite is a rare gemstone that is only found from a single deposit site in northern Tanzania. It was discovered in the 1960s and has since become a popular gemstone used by high-value jewelers. The Tanzanite mining sites located in Mererani ward located at Simanjiro district in Manyara region (Helliesen, 2012).

According to (Selo & Ngole, 2022) the existence of a mine in an area is expected to change the lives of surrounding communities through the provision of employment opportunities and basic services such as water, electricity, clinics/health centres, and schools, and road network. It's very unfortunate that Lack of essential social essential services is a constant challenge in many mining sites in Tanzania, and Mererani areas where Tanzanite is mined are not different.

The existing situation in Mererani does affect members of the surrounding communities, specifically women, children, elders and people with disability. It also affects the socio-economic development of the entire area as energetic individuals who work in mining and other who conduct supporting activities are not assured of getting quality services when need, thus always feels insecure (Mbuya *et al.*, 2023).

Increased poverty affected the provision, quality and access to essential services. For instance, in the study area access to health facilities in some of the communities remains a challenge as people trek tens of kilometers before getting to the nearest health facility (URT, 2020). Much health-related cases include malaria, pneumonia, measles, diarrhea and respiratory infection has been recorded. Women and children are vulnerable, women being primary and second victims during pregnancy complications and children illness respectively. Other health problems are linked with sexually transmitted infections (STIs) and opportunistic complications such as TB resulting from HIV/AIDS infection (Mbuya *et al.*, 2023).

Availability of water in Mererani is another challenge, although there are shallow wells, the water is neither safe nor clean. The community relies on water delivered by tankers from Arusha or Moshi towns; and the water is expensive sold at 300 TZS per 20 liters container (URT, 2020). Education

infrastructures are dilapidated with signs of improvement in recent years. However, there were 54 primary schools with only 294 teachers expected to teach in these schools from class one to seven (URT, 2020).

Given the existing social services status in the study area; This was conducted to identify accessed social services by surrounding communities and their perception towards social services satisfactions

## RESEARCH METHODOLOGY

### Research Design

A research design provides a framework for the collection and analysis of data, it establishes the structure that connects the research questions to the gathering of empirical data, and ultimately, to the conclusions drawn (Kothari, 2009). This study employed a cross-sectional survey research design. The design involved collecting data from a single point at a time on the impact on household welfare through entrepreneurial activities done by the surrounding Mererani mining communities. This type of study design utilizes different groups of people who differ in the variable of interest, but share other characteristics such as socioeconomic status, educational background, and ethnicity. The design is considered as the most appropriate for descriptive purposes and determination of relationship between variables.

### Description of the Study Area

Mererani Town is a multiethnic mining area, composed of a conglomerate of people from Tanzania and neighboring countries (Lange, 2006). Mererani is located 150 kilometers from Orkesmet, the Simanjiro District Headquarters, 70 kilometers from Arusha and Moshi Municipalities. The original inhabitants of Mererani are Maasai and Meru. However, due to immigration, immigrants are estimated to occupy a big portion of the population (URT, 2012). Mererani consists of five villages which are Songambe A, Songambe B, Zaire, Kazamoyo and Endiyamutu. Mererani is the only place in the world that put Tanzania on the map of Tanzanite producer. There is almost every tribe presented in the area such as Wachaga, Waarusha, Wameru and Maasai who score highest percentage in the area. The presence of mining activities and entrepreneurial activities in Mererani has influenced the researcher to conduct this study in the area. The study assumed that the views of respondents in Mererani will presents the views of other mining areas surround communities in Tanzania.

### Sample size and Sampling techniques

A total of 128 entrepreneurs were sampled for the study from the sampling frame of 693 entrepreneurs in Mererani township authority area. The total number of Entrepreneurs was obtained from the register of Township Executive Officer (TEO). The researcher calculated the required sample (n) depending on the total number of the entrepreneurs (N) in each village using Boyd *et al.* (1981) formula for known population.

$$n = C/100 \times N$$

Where:

*C* = figure greater than or equal to five percent of village household population.

*N* = the total number of households in the villages.

*n* = the number of selected households.

Four villages were selected from two wards (Mererani and Endiyamtu) from which a representative sample was selected .A total of 128 respondents were identified from Songambe (34), Zaire (30), Kazamoyo (34), and Endiyamutu (30). This is shown in Table 1.

**Table 1: The number of respondents from ward and village**

Ward	Village	Total number of entrepreneurs (N)	Percent of entrepreneurs involved in the study	Number of entrepreneurs involved in study(n)
Mererani	Songambe	226	15	34
	Zaire	200	15	30
Endiyamuu	Kazamoyo	342	10	34
	Endiyamutu	195	15	30
<b>Total</b>		<b>693</b>	<b>55</b>	<b>128</b>

Source: Mererani Township Authority (2017)

### Sampling techniques

Both non-probability and probability sampling procedures were used in this study. Probability sampling (simple random sampling) was used to select respondents in each village for the study. A list of respondents (entrepreneurs) were obtained from Mererani township authority office in which entrepreneurs were randomly selected from lists provided whereby each name were written in an individual piece of paper and the pieces were placed in a box (lottery technique) then names of entrepreneurs to be interviewed were picked whereby each respondent had the chance of being included. Random sampling is an appropriate strategy, when one wants to generalize from the sample studied to a large population (Saunders *et al.*, 2009). Non probability (purposive) sampling was used to select 13 key informants, which include two ward Councilors, one township executive officer, one district

business registration officer, one division officer, two ward executive officer, four village chairperson and two leaders of Mererani business owners association. The reason for their inclusion is the fact that as leaders and officers, they are sufficiently place to know better the subject matter of this study, especially on issues related to policies and entrepreneurial activities. They are also well informed and experienced in all issues related entrepreneurial activities done around. This technique is useful when sample element and locations are chosen to fulfill certain criteria or characteristics or have attributes under study (Saunders *et al.*, 2009).

#### Data Collection Methods

This study used several methods of data collection. The researchers opted to use different methods in order to ensure validity and reliability, suitability and adequacy of data. The researcher also, assumed that, no single technique is necessarily superior to any other while a combination of two or three methods would make data highly reliable. Data were gathered from both primary and secondary sources. Both quantitative and qualitative information were gathered by using interview, observations and review of available documents related to the subject matter.

An interview is a data collection technique that involves oral questioning of respondents (Saunders *et al.*, 2009). In research interview is a prominent data collection strategy in both qualitative and quantitative research (Bryman, 2008). For the case of getting more detailed and accuracy information interviews is also suggested to be used in the study. In this study therefore, face to face interview was used whereby structured questionnaire which included both closed and opened ended questions were used. Structured questionnaires were used to guide the interviews with respondents during collection of quantitative primary data. Questionnaires were prepared based on the study research objectives. Qualitative data were gathered by using face to face interviews with 13 key informants. To ensure validity and credibility of the collected data the interview were recorded by writing them down and tape-recording the responses in relation to the study specific objectives.

Observation is the systematic description of events, behaviors, and artifacts in the social setting chosen for study (Kawulich, 2005). Observations enable the researcher to describe existing situations using the five senses, providing a "written photograph" of the situation under study. Observations enable the researcher to observe events that informants may be unable or unwilling to share when doing so would be impolitic, impolite, or insensitive, and observe situations informants have described in interviews, thereby making them aware of distortions or inaccuracies in description provided by those informants (Kawulich, 2005). In this study therefore researcher spent enough time in the field where he managed to observe the entrepreneurial activities conducted by Mererani mines surrounding communities, and accessed social services. Observations also enabled the researcher get a holistic understanding of other phenomena under study.

#### Data Analysis

The collected data were coded, summarized, and analyzed by using Statistical Packages for Social Sciences (SPSS) computer software in conformity with objectives of the study. SPSS has been applied because it takes data from almost any type of file and uses them to generate tabulated reports, charts, perform descriptive statistics and conduct complex statistical analysis (Collins, 2005). Frequency distribution tables were generated to summarize the data. A descriptive analysis used to analyze the collected quantitative data. The researcher provided a detailed description of the phenomena and provides their significant relationship based on the study objectives. Content analysis was used in analyzing qualitative data whereby data were transcribed into text and analyzed based on content and meaning of the text

## RESULTS AND DISCUSSION

#### Access to Social Services among Communities Surrounding Mererani Mines

As a need and out of necessity, the surrounding communities must access social services. This study wanted to know accessed social services by surrounding communities in the study area. The findings as shown in Table 2 indicate that 27.3% of the respondents' were able to access health services, 25.1% education services, 26.3% communication services, 20.1% electricity services and only 1.2% were able to access water services. These findings provide evidence that entrepreneurial activities in Mererani enabled communities surrounding mines to access social services.

**Table 2: Social services access in Mererani (n= 128)**

Household asset	Responses	
	Count	Percent
Health services	111	27.3
Education Services	102	25.1
Electricity	82	20.1
Water supply	5	1.2
Communication services	107	26.3

**N. B.** Respondents gave more than one answer categories, therefore the number of cases do not add to 128 (Data set was based on multiple responses)

#### Communication services

This study found that the majority of respondents (26.3%) had fair access to communications services due to the availability of mobile and telephone

network as well as accessories in the study area. Available telephone and mobile systems include: TTCL, Vodacom, Halotel, Tigo and Airtel. Again this study found out that surrounding mining communities involved entrepreneurial activities access the communication services because they have income generating activities that enables them to pay bills. Communication services especially telephones and mobile networks simplify the process of doing entrepreneurial activities (Daffa, 2012).

#### ***Health services***

The study also found that health services were accessible to community in the study area. The area has one health centre owned by government and four laboratory centres as well as two dispensaries which are privately owned. Registered shops also sales human drugs to simplify access to health services in the study area. Furthermore this study noted that accessibility to health services was due to some respondents being members of health insurance funds such as Community Health Fund (CHF). However, it was also noted that some respondents were not members of community health fund but they accessed the services by paying direct cost to the health centre when they needed the services. This study also found out that 27.3% of respondents reported to access health services, the existing health services does not satisfy the current requirements of communities. This is due to the fact that the available health centre and dispensary does not provide specialized and soft medical services. The study further found out that Mererani area and the entire Simanjiro district at large has no designated hospital, which means community members has to travel to Moshi or Arusha to look for advanced medical service. Unfortunately the existing dispensary and health centre does not even have a standby car (ambulance) which would help to rush patients in case of emergency. A study by Nyamaume (2013), reported that in Simanjiro district where Mererani is found access to health in some communities is a great challenge as people trek tens of kilometers before getting to the nearest health facility.

#### ***Education services***

Provision of education is another important social service noted in the study area. The study found that there are two primary schools and one Secondary school owned by government and one secondary school and three Primary schools that are privately owned. This study found out that surrounding communities accessed education services because the fifth government has introduced free education policy for primary and secondary schools (from form 1 to form 4). Furthermore the surrounding communities managed to access education services because they used income from their entrepreneurial activities to pay school bills. These findings are similar to the study conducted in Zambia which revealed that community members engaged in entrepreneurial activities increased household's expenditure on education and health (Lacalle *et al.*, 2008).

#### ***Electricity services***

This study found out that electricity is also accessed in study area. Most of the houses are connected with electricity in the study area. Electricity services are easily accessed because of the ongoing project to distribute electricity to all rural areas in Tanzania. The project is under the ministry of energy and mineral through its Rural Electrification Agency (REA). This study noted that availability of electricity services in the study area championed the growth of entrepreneurial activities.

#### ***Access to water services***

Furthermore this study found out that water availability was a challenge to many mining surrounding communities in the study area. This is due to the fact that there is no tapped water, only available source of water is drilled deep wells. Unfortunately the water has a lot of fluoride and thus not suitable for domestic uses. Currently the communities get soft, clean, safe and drinkable water from suppliers from Moshi municipality who come with their truck with water tank in board, unfortunately only few people are able to access it because of high price. This study found that twenty litres of water is sold at 1000 TZS. This means that it cost 30000 TZS per month for each household if they are to use one bucket (20litres) of safe and drinkable water per day. The challenge of clean, safe and drinkable water in Mererani area is not a new phenomenon. Study by Rukonge (2006) reported that there is a dire need of water in Mererani, and community members paid about 300 TZS for a 20 litres container, an average of 600 TZS per person per day; and for an average household of four people spent about 2400 TZS in a day and 72 000TZS in the month on water only. This study noted that the cost of safe and drinkable water in the study area is increasing for example eleven years ago (2006) a person was to pay 300 TZS for 20 litres and now in 2017 a person is paying 1000 TZS.

#### ***Perception of mining surrounding communities towards social services satisfactions***

After identifying the accessed social services by respondents this study wanted to measure the perception of respondents on satisfaction of accessed social services in the study area. The perceptions of satisfactions were determined using Likert Scale. Respondents were asked about their perceptions towards satisfaction of existing social services such as health, water, education, electricity and communication. During data analysis the responses of the perception were then categorized into positive, neutral and negative. The results are presented in Table 3 and indicated that 75.8 % of respondents interviewed had negative perception of satisfaction towards existing social services in Mererani Tanzanite mining area. On the other hand, results indicate that 23.4 % of interviewed respondents had a neutral perception of satisfaction towards existing social services in the study area. Furthermore only 0.8 % of respondents interviewed had positive perception of satisfaction towards existing social services in the study area.

Majority of the respondents (75.8%) had negative perception towards social services in the study area, implies that existing social services does not

meet the needs of the users (mining surrounding communities). Therefore, effort has to be done to improve the delivery of services that will satisfy the needs of the mining surrounding communities. For example in health services this study noted that Simanjiro district where Mererani is located has no hospital which offer specialized services. This findings are not surprising because study done by Nyamaume, (2013) reported that mining surrounding communities in Mererani has to travel to Arusha or Moshi to look for specialized health services.

Furthermore, the negative perceptions have been championed by existence of many years challenge of water services in Mererani area. This is due to the fact that there is no trusted and reliable source of water in the study area, only available source of water is deep drilled wells, but the produced water is hard with a lot of fluoride thus it does not satisfy the user's needs. The existing challenges in social services provisions delivery should be rectified unless mining surrounding will continue to have suffer and the possessed negative perception may lead to miss trust of leaders at local and central government.

The fact that few respondents interviewed (23.4 %) showed to have neutral perceptions implies that they were not able to decide as to whether they are satisfied or not satisfied by existing social services. This study argues that probably this happened because of the fact that many respondents interviewed (74%) had low level of education. It has been noted that education level is an important variable as it affects the level of exposure of an individual and general perception of world issues (URT, 2005).

Respondents who showed to have positive perceptions with existing social services in the study area are very few (0.8%) which means efforts has to be done to improve the delivery of services in Mererani area. This study found that the positive perception of respondents has been championed by the fact that the study area is connected with all communication services network from different mobile phones, recently constructed tarmac road which connect Mererani with Arusha City and Moshi Municipality. Also the emphasize in rural electrification through (REA) by the fifth government. Furthermore, this study found that probably the positive perception was due to the improved overall performance of secondary school in form four examinations in Simanjiro district where the performance has increased from 47 % in 2014 to 61 % in 2015 and 72.24 % in the year 2016 (Chaula, 2017).

**Table 3: Satisfactions of mining surrounding communities towards social services**

perceptions	Frequency	Percent (%)
Negative	97	75.8
Neutral	30	23.4
Positive	1	0.8
<b>Total</b>	<b>128</b>	<b>100</b>

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

The study concludes that accessed social service by Mererani mines surrounding communities such as health services, education services, communication services, and electricity services are basic necessity for them to engage in socio-economic development activities. Also, the study concludes that access to water services is a great challenge among the Mererani mines surrounding households as the findings from study showed that only 1.2% had access to safe clean and drinkable portable water. The study also concludes that the majority of respondents had negative perceptions towards existing social services in Mererani as they do not satisfy their demands

### Recommendations

The study also recommends that there is a need to add other social services as needs detect while increasing efforts to improve the existing ones. The study recommends the government, the surrounding communities and other development stakeholders to join their efforts in eradicating challenge of access to water in the study area. This has been a long-term challenge even before political independence of Tanganyika (Tanzania). If this challenge will be solved the amount of money used by communities for getting water will be used for other development aspects and thus contributes to the improved household welfare.

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