FORMATIVE ASSESSMENT

DATA FOR ACTION FOR TB VULNERABLE POPULATIONS

– INFORMAL MINERS IN CHUNYA DC, MBEYA REGION, TANZANIA

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EXECUTIVE SUMMARY

Tuberculosis (TB) continues to be a major public health threat globally as an estimated 9.0 million new cases and 1.5 million TB deaths occurred worldwide in 2013[1]. World Health Organization (WHO) estimates that one third of the world's population is infected with the latent form of TB and therefore at risk of progressing to active TB. For most individuals, the initial infection is contained by host defenses, and the infection remains latent. However, among TB vulnerable population, the risk of progression from latent TB to active TB is significantly higher. Vulnerable population are more prone to TB either due to more environmental (over-crowdedness, poor ventilation), biological (immunologically suppressed, poor nutrition), or behavioral risks (direct air borne transmission or indirectly through behavior that increases the risk of non-TB diseases that suppresses immunity), or barriers in accessing public services (systematically excluded from access often due to criminalization, stigma and discrimination) they face.

The aim of this formative assessment was to fill data gaps related to the scope TB exposure among Informal Mining communities in Chunya district Mbeya region, Tanzania in order to inform targeting of TB prevention and care interventions. Specifically, the formative assessment:

- Located and characterized Geographical area and hotspots (small mining) in Chunya for small scale mining areas.
- Conducted mining-community population size estimates in Chunya using mapping, enumeration and a modified Delphi estimate.
- Assessed TB risk behaviors and practice, and the context in which TB risk behaviors take place for Mining populations in Chunya district, and
- Assessed the factors that contribute to the ways in which Mining Population use TB and other health services, including engagement in care and treatment for TB Cases
- This formative study has come up with recommendations specifically addressing the TB, HIV and TB/HIV services for the Chunya informal mining community.

The formative assessment was conducted using qualitative ethnographic methods, which elicit detailed descriptions of the context and meaning from the experience and perspective of members of the target population. Data collection methods included mapping, observation, Key informant interviews, and a brief socio-demographic survey was administered to all interview participants. Multiple methods were used to allow for triangulation.

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1 World Health Organization. Global tuberculosis report. Geneva, Switzerland: 2014.

1 BACKGROUND

TB SITUATION

Globally, TB still poses a serious public health concern, despite major progress in reducing TB cases and deaths in the past two decades. Africa has 24% of the world's TB cases yet only 16% of its population. Africa also has the highest rates of cases and deaths per capita. Africa's TB burden is further confounded by the AIDS epidemic, with almost 80% of TB cases among people living with HIV residing in this region[2].

Tanzania has one of the highest burdens of TB in the world with approximately 495 TB cases per 100,000 adults. In the year 2016, a total of 65,809 TB cases were reported to NTLP. The estimated TB incidence in 160,000 (75,000 – 275,000). In the same year, it is estimated that TB mortality excluding TB and HIV co-infection was 28,000(13,000- 50,000), with the morality rate of 51(23 -90) per 100,000 populations. TB case detection (notified/ estimated incidence) in Tanzania is still very low, estimated to be about 40%.

TB SITUATION AMONG MINERS.

The mining sector is hardest hit by TB due to vulnerabilities caused by factors such as workers' exposure to silica and dust, poor working and living conditions and a lack of TB prevention and education services. Added to these factors are others associated with migration such as a lack of social support structures and the inability to access or afford health services. The prevalence of the disease, especially in small scale mining workers, erodes the positive contribution made by the sector to Tanzania's economic development. Immediate intervention is required because the disease can be controlled and cured through early diagnosis and treatment

STUDY JUSTIFICATION

Chunya district is located in the northwestern part of Mbeya region. To the north, the district is bordered by Singida and Tabora regions, and to the east, by Mbarali district. Mbozi and Mbeya districts border Chunya in the south, and Rukwa region in the west. The district is covered by an area of 29,219 square kilometers (sq. km) (29,219,000 ha) of which 28,114 sq. km (28,114,000 ha) are land and 1,705 sq. km (1,705,000 ha) are covered with water, including the rivers Sangwe, Lupa, Zira, and part of Lake Rukwa which constitutes the inland water bodies. Chunya district is one of the most prominent in Tanzania in terms of mineral wealth. The area covered by gold minerals is about 2,600 kilometers (kms)[3]. In resent years new gold fields in have opened up and attracted large influx of artisanal miners. However, there is lack of data and other relevant information regarding TB risks, risk drivers, population size estimates and access to health services to the mining community in this area.

The purpose of the formative assessment is to gather in-depth data that can be used to better understand the context of characteristics and behaviors of TB in the mines. Mine workers an estimated one-third of TB infections in Tanzania are linked to mining activities[4]. Recent research in sub-Saharan Africa, including Tanzania has estimated that 3% to 7% of miners are becoming ill with the disease each year[5]. Because the mining industry is heavily dependent on people moving from one location to another, the mines serve as a wellspring for infection. It is estimated that each migrant/mining worker who returns home with TB spreads the disease to an estimated 10 to 15 people in his community. While in Tanzania especially the southern zone there is a lot of local and unofficial mining activities happening in many places, few or no information have documented the health effect surrounding the people involved in this activity in relation to TB infection Undersetting situation at the mining location and the size of the population size to help stakeholders in planning privation and treatments programs to the miners.

FORMATIVE ASSESSMENT OBJECTIVES

The primary objective of this formative assessment is to fill data gaps related to the scope TB exposure among Mining communities in Chunya district Mbeya region, Tanzania in order to inform targeting of TB prevention and care interventions. The findings on Chunya may not be extrapolated to other mining areas in the country due to significant differences, including mineral composition and related processing, and social cultural aspects of miners and surrounding communities.

Specific objectives were:
- To locate and characterize Geographical area and hotspots (small mining) in Chunya for small mining areas.
- To Conduct mining-community population size estimates for each hotspot in Chunya using mapping with census or enumeration and a modified Delphi estimate
- To assess the scope of TB exposure within mining geographical location and hotspots
- To describe TB risks, TB risk drivers, and the context in which TB risk behaviors take place for Mining populations in Chunya district.
- Describe the factors that contribute to the ways in which Mining Population use TB and other health services, including engagement in care and treatment for TB Cases
- Assess involvement of CSOs and other stakeholders in the control of TB in the mining services.

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2   State of Tuberculosis in The SADC Region, 2012

3   J Mwami et al - ILO

4   David Stuckler et al: Mining and Risk of Tuberculosis in Sub-Saharan Africa

5   USAID TB CARE II Project, FY2016 Core Quarterly Report, January – March 2016

2 METHODOLOGY

FORMATIVE ASSESSMENT DESIGN
The study was conducted in Chunya district Mbeya region.

The formative assessment was conducted using qualitative ethnographic methods, which elicit detailed descriptions of the context and meaning from the experience and perspective of members of the target population. For this study, multiple methods were used to allow for triangulation.

Data collection methods included mapping, observation, Key informant interviews and a brief socio-demographic survey administered to all interview participants. Multiple methods were used to allow for triangulation.

This study was carried out in phases using successive rounds of key informant interviews, initially targeting providers/experts (Secondary Key Informants) and then moving on to members of the target population (primary key informants). The two types of key informants were asked a similar series of questions in order to triangulate findings and provide a clear picture of mining activities that pose TB risks, and TB risk drivers in the study are. Data was collated and synthesized after each round of key informant interviews. Population size estimation was done by key informant guided estimation using the modified Delphi approach with providers/experts, Wisdom of the Crowds approach with primary key informants, and observation and counting (mapping and enumeration). All of these methods have been validated in other areas including the United States, Kenya, India, Nepal, and Pakistan (Emmanuel, 2010, Archibald, 2001, Holmberg 1996, Vadivoo 2008, UNAIDS 2011).

POPULATIONS TO BE STUDIED
This formative assessment on informal miners in Chunya DC was preceded by a prioritization of TB vulnerable populations in Tanzania, during inception phase of CRG tools. The prioritization of TB vulnerable populations was done by a multi-stakeholder group (also referred to as the taskforce) of TB activists formed with personnel from government and non-government platform comprising TB and HIV programme and disease experts, and community experts such as TB support groups and Civil Society Organizations serving TB vulnerable populations.

The taskforce used the prioritization tool in the Stop TB Action Framework to estimate contribution of all TB burden (active TB cases of all forms) by a particular population sub-group, identify their TB risks (environment, biology, behavior) and the barriers they face to access health service be it legal, economic, gender or human rights.

Each sub-population group was then ranked and, through a qualitative discussion and sharing of empirical data, proxy information and regional TB data from SADC countries, members of the taskforce prioritized sub-population groups with the highest combined scores. Informal miners received the highest score of all sub-population identified. The prioritization was followed by desk review to identify data gaps related to TB vulnerable population, and the primary aim of this formative assessment is to fill data gaps related to the scope TB exposure among Mining communities in Chunya district Mbeya region. The outcome of the tool used prioritization are included in the annex.

The study populations included:
- Mining Community, defined for the purposes of this study as individuals who are working in the local mining area as either miners or any other person involved in activities supporting mining activities who have been in the area for the past 5 days, female or male, aged 15 years or who are able to adequately grant informed consent.

- Providers/experts, defined as individuals 15 years of age or older, with ability to provide informed consent, who provide services to, have in-depth knowledge of, or interact on a regular basis with, the target populations. This included health and social service providers and key staff of NGO/CBOs who interact with mining communities, but it also included other persons, mining owners, informal community leaders, pharmacists or traditional healers as deemed appropriate by the study team.

Targeted population:
1. Current mineworkers
2. Ex- Mineworkers
3. Their families
4. Community Surrounding
5. CSOs, NGOs and Mining outfits

DATA COLLATION
Following the secondary key informant interviews, the information collected was summarized and then serve as the foundation for planning primary key informant interviews. Through information gathered from secondary key informants regarding specific hotspots, the assessment team determined the hotspots to be visited for spot validation and recruiting primary key informants.

After data collation some secondary key informants were approached again in order to refine the population size estimates in keeping with the Delphi Method.

PRIMARY KEY INFORMANT INTERVIEWS
Based on sites determined through data collation, study teams conducted key informant interviews with miners and other people involved in activities that supports mining activities in specific areas.

A number of primary key informant interviews were conducted at each hotspot visited, garnering information on the types of activities present, TB risks, TB risk drivers, and their approximate numbers (based on the Wisdom of the Crowds method for population size estimation). The assessment team conducted at least 6 and up to 8 primary key informant interviews at each hotspot visited.

GPS coordinates were recorded at all hotspots visited and used for mapping using mapping software.

DATA SYNTHESIS

Upon completion of interviews with primary key informants, a review of all collected data was conducted, and hotspots and population size estimates were further triangulated through discussions with local actors such TB control programs and NGO working in those communities.

RECRUITING AND SAMPLING

To take part in this study, participants had to be:

Primary Key informants:
- Be 15 years of age or older
- Able to give informed assent or consent.
- Not be exhibiting violent behavior or signs of erratic behavior at the time of the interview
- Have lived or worked in the current mining places for the past 5 days
- Able to speak English or Swahili

Must provide services to, have in-depth knowledge of, or interact on a regular basis with, the target population. This included health and social service providers and key staff of NGO/CBOs who interact with Miners, and others as deemed appropriate by the study team.

Recruitment for the primary key informant interviews was carried out using purposive sampling to garner a diversity of perspectives (e.g., male and female, young and old, migrant and local resident, etc), with assistance from secondary key informants who have expert knowledge of mining activities in a given geographic focus area. Miners and persons working in those environments were approached by the assessment team in their locations. The study coordinator assessed the safety of the location for the study team and participants and determined whether it is safe to conduct interviews before beginning. Arrangements were made for interviews to take place in public spaces that are determined to be safe. The study team mapped the locations of the hot spots they visit with GPS devices.

Recruitment for the secondary key informant interviews was carried out using purposive sampling to garner a diversity of perspectives from District TB control program staff, and other person familiar with the population.

Field team members (data collectors) were trained in mapping, observation and interviewing. Field team members participate in a two days training to develop skills in interviewing, safety and dealing with ethical issues. In addition, all study staff received human subjects training.

MAPPING AND OBSERVATION

Mapping and observation have been used to document the environment, services, and potential locations for recruiting participants for focus groups, interviews. Mapping and observation was also being used as the foundation for the size estimation exercise. Observation was used to describe activities or behaviors in terms of person, time and place, and to identify patterns of activity that were relevant for interventions. During observation the assessment team member documented the characteristics of the location, people, and interactions among people.

This assessment drew on existing data and local expert knowledge of the area to document through observation and mapping.

DATA COLLECTION, MANAGEMENT AND ANALYSIS

DATA COLLECTION

Data collection did not include the collection of personal identifiers or biological testing. For the interviews with service providers/experts, it was necessary to identify or describe a person's professional role or identity, but not their name. Semi-structured interview guides were used for the interviews. Guides were developed in English, and translated into Kiswahili.

Interviews were carried out in Kiswahili by a two-person data collection team of trained interviewers One person on the interview team acted as interviewer or facilitator and the other person acted as note taker. The two-person team enables the interviewer to focus on conducting the interview without the distraction of taking notes and it also enhances the safety of team members. All study staff were required to sign confidentiality agreements.

Interviews took no more than 40 minutes and covered the following topics:
- Availability of mining activities and mining hotspots in the district and or Geographical mining area.
- TB risks and TB risk drivers
- Population size estimates
- Availability of and access to health services and other services targeting Miners and mining populations

Procedures for the interviews are as follows:

INFORMED CONSENT PROCEDURES

This study required oral informed consent, and identification of study participants by name was not done.

Interviewers were instructed to read the Kiswahili language consent form to the participant, which explained the process, including the purpose of the interview. The interviewer was required to sign a statement indicating that this information has been provided to the participant, and noted down whether the participant had consented to be interviewed or not. Each participant was offered a copy of the unsigned consent form which included information about how to contact the project leaders. Once consent is given, the interviewer proceeded with the relevant interview. The interviewer serving as the note-taker recorded the date of the interview, location of the interview and type of interviewee.

At the end of the interview any participants seeking information, screening or treatment was given information about local services for appropriate care.

GPS coordinates were collected using a hand-held device from every hot spot visited by the assessment team in order to create maps of where mining do happen for targeted interventions. Coordinates were downloaded onto the study team's password protected laptop at the end of each day. Physical maps (e.g., from district planning offices, GIS, publicly available satellite images, or hand drawn) were used to assist with defining hot spot boundaries.

DATA MANAGEMENT AND ANALYSIS

At the end of each interview, the two-person interview team debriefed and wrote expanded field notes. The handwritten field notes were entered into a password protected laptop. Handwritten field notes and notes made on physical maps were stored in a locked cabinet.

The expanded field notes and debriefing sessions constitutes an ongoing and iterative process of analysis that began with the first interview and continued until all data were collected. Concept matrices was developed and updated after each interview. The study team kept track of emerging concepts and findings, and maintained all electronic data.

POPULATION SIZE ESTIMATION METHODS

Enumeration: Enumeration generally starts within a sample frame or list, a sample of units within that list are chosen, and only the individuals within those chosen units are counted. The number counted is then projected according to the size and structure of the sample frame. The assessment team conducted enumeration of people who are miner or work within in mining areas within each mining area. Crude population size estimates for the specific mining area(hotspot) where all known hotspots are not visited was generated by multiplying the average number of miners in hotspot by the total number of hotspots reported in the study area.
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Modified Delphi Approach: In the Delphi method, experts from disciplines related to the study population are first identified and are then asked to participate in the inquiry. Each is asked to provide an estimate of the value of interest. Typically, the questions are refined as the research proceeds in an iterative process. The analysis identifies the range of opinions about the value, which would be presented to the group of experts. Persons holding opinions at the extremes of the range would be asked to reassess their opinion in view of the group's range and provide reasons for their positions (Dalkey, 1969). The Delphi approach is an iterative process to get as close to a true value as possible.

The modified Delphi approach has been used for population size estimation (Archibald, 2001, Dalkey 1969) and is similar to the Delphi method; however, experts are not revisited and there is no iterative process. Results are presented as a midpoint and range of the individual experts' opinion point estimates. In this study, the field team asked secondary key informants (experts) for their opinion of the number of miners and mining community in a specific geographic area as part of their key informant interview. The midpoint of these values was taken as a crude estimate for the mining population size in a study area. When extreme values were included in the range provided by experts, some secondary key informants were approached again in order to refine the population size estimates, in keeping with the Delphi Method.

Wisdom of the Crowd: Similar to the Modified Delphi Approach, the Wisdom of the Crowd method aims to get a consensus on the size of the population; however, the estimates came from members of the population themselves – in this case, Miners and members of the mining community in the study area – rather than the experts. This is a method that has been used around the world in which a researcher asks a large number of people to estimate something, assuming that the average/median of their estimates was approximate the correct answer (Surowiecki, J). Primary key informants were asked to give population estimates of miners and other members of the mining community for each listed hotspot. A median was calculated from population size estimates generated during the primary interviews with all primary key informants from all hotspots and then triangulated with information from secondary interviews within the same area.

In each geographic focus area estimates from each method was compared side by side and a final estimate agreed upon after consultations with key stakeholders. Miners population estimates did change significantly especially for larger mining hotspots where stakeholders felt few respondents had over estimated their responses. The iterative process proved to be useful to steer the estimation process to a rather conscious number of miners in a particular locale.

TRANSLATION

All interviews were conducted in Kiswahili, the official and predominant language in Tanzania, by native Kiswahili speakers or persons who are fluent in Kiswahili.

REIMBURSEMENTS FOR PARTICIPANTS

No cash was paid for participation, but participant were reimbursed for their transport to and from the site of interview. A flat rate of Tshs. 5000/= was give to respondents.

CONFIDENTIALITY PROTECTIONS

All study staff signed a confidentiality agreement relating to their work during the course of the study. Interviews took place in locations where the interviews cannot be overheard by others. Names of participants were not collected, and all data was entered into a password protected computer accessible only to the study team and investigators. Any paper notes have been stored in a locked cabinet.

STUDY LIMITATIONS

The findings in this study are subjected to the limitations of the study design. The methodology necessarily relies on extrapolation from key informants in only four (4) mining sites, small samples

which may not be statistically representative of the population. Findings are also subjected to the population size estimation methods being used, as at some time there may not be enough people to estimate the population. Therefore, population size estimates were further triangulated through discussions with local actors. At minimum, it produces a lower bound of the number of miners at TB risk in a geographic area. Population size estimates cannot be generalized to the entire region, but again provides a lower bound. The information collected is intended to inform programmatic activities as well as the need for further, more rigorous surveys for the TB implementing partners, and is not be representative of national estimates.

PLANS FOR PUBLICATION AND DISSEMINATION OF PROJECT FINDINGS
The findings of this formative assessment was presented to a validation meeting comprising Data for action for TB vulnerable population task force formed during orientation meeting, and the recommendations will be written in a short report with appended GIS-generated maps and presented to the TB prevention programs, and relevant stakeholders in order to encourage the use of these data for planning of prevention activities.

3 FINDINGS

In selecting mining communities to visit, the assessment team purposeful selected areas with varying length of settlement, to capture differences in demographic composition of miners. One mining site, with settlement lasting more than five years, two mining communities with human settlements between two to five years, and one newly established mining community. The population census survey in 2012 established Chunya population to be 178,553[6].

VISITED MINING SITES

MAKONGOLOSI SITE
Makongolosi is an old gold mining community, located north or Chunya town. The site hosts, small and medium sized mining hotspots. The assessment team visited the largest mining hotspots known as Mtasha – Makongolosi mining site. Using direct count, the assessment team estimated miners' population to be 619. The site is located one and a half (1.5) kilometers from Makongolosi town center, at GPS (-8.4104467,33.1644967).

ITUMBI SITE
Itumbi mining site is located 13 kilometers east of Matundasi, and 18 kilometers from Makongolosi town center. The areas have small and medium sized mining hotspots. Miners settlement in Itumbi dates back 5 years, characterized with permanent and temporary housing structures. Using direct count, the assessment team estimated the miners' population to be 846. The nearest health facility is located 14 kilometers. The GPS coordinate (-8.3713167.33.3261233)
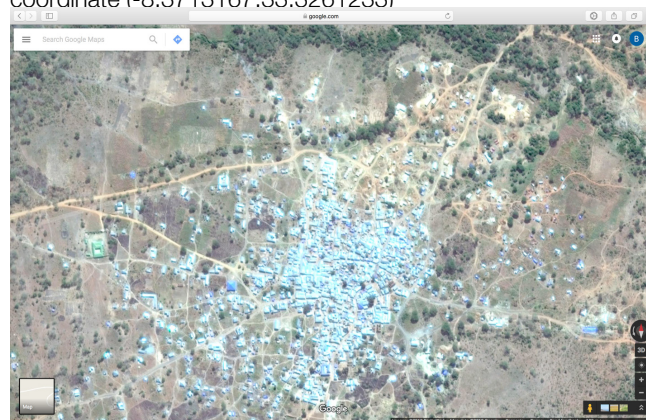
Image 1 Itumbi mining site

MBIGWA SITE
Mbigwa is a mining community, some 15 kilometers east of Chunya town. The site is distinctively characterized by tent housing, although miners have settled in this area for the past three years. Using direct count, the assessment team estimates the miners' population to be 720.

SELEWE SITE
Selewe is a newly discovered gold mining site. Miners started to flow to this area about eight (8) days before field data collection. In one week, the area had attracted nearly 400 miners from all

over Tanzania, such as Arusha, Tanga, Dodoma, Ruvuma, Mara, Zanzibar and Geita regions.

IMAGE 2 NEW MINING SITE AT SELEWE

MINING SITES IDENTIFIED IN CHUNYA DC

The assessment team used wisdom of the crowd approach to identify artisanal mining sites in Chunya DC. During in-depth interviews, miners and members of the mining community in the study area – rather than the experts, were asked to mention mining hotspot they know and estimates the population themselves. Primary key informants were asked to give population estimates of miners and other members of the mining community for each listed hotspot. A median was then calculated from population size estimates generated during the primary interviews with all primary key informants from all hotspots and triangulated with information from secondary interviews within the same area.

TABLE 1 MINING HOTSPOTS IDENTIFIED IN CHUNYA DC

Mwaoga	Makongorosi	Godima	Kwa henya	Matundasi
Mtasha	Stamico	Haonga	Kwa Kibusi	Mbugani
Itumbi	Patamela	Huribi	Kwa Sanga	Mererani
Mapipa	Gepu	Igodima	Langwa	Mkaanjiwa
Ndoroboni	Mwamwinga	Isenyela	Manyanya	Mremberi
Mbigwa	Mashariki	Izumbi	Manyuki	Mto Kiponia

Serewi	Paulo	Kalungu	Mapele	Mto Makongorosi
Mapogoro	Chandele	Kasakalawe	Masanza	Mwanzo Mgumu
Sanyo	Gane Mining	Kuwait	Matondo	Sangambi
Saza	Shogha	Ujerumani		

POPULATIONS SIZE ESTIMATES

Estimates of mining population in Chunya DC were generated using three size estimation techniques, namely enumeration/ Census, wisdom of the crowds, and the modified Delphi approach.

Using modified Delphi approach, which is an iterative process, the assessment team estimated the population size of miners in 48 identified mining hotspots to be 17,472.

TB RISKS

In assessing TB risks in visited mining communities, the assessment team used structured observation, and in-depth interviews to assess mining environment, miners' behavior that renders them prone to develop active tuberculosis, and access to health services.

ENVIRONMENT
FINE DUST EXPOSURE

In each of the four (4) artisanal mining communities visited, the assessment team observed the mineral processing procedures. The entire process is labor intensive and found out to be carried with little to none level of mechanization. Miners were found to be highly exposed to fine dust, during underground mining extraction and when crushing silica bearing rocks.

The gold mining processing starts with underground blasting of rocks, around 20 to 400 meters. The blasted rocks are then shoveled using handy tools, and loaded into small sacks that were pulled up to the surface. This is followed by crushing of the rocks into ultra fine dust using locally improved, motor-run, crushers see image 3 below. The entire process produce respirable particles. Miners were found to be working in shift, ranging from 8 to 12 hours, mostly during day time. There was no evidence of wet methods to suppress dust generation when drilling and blasting.

IMAGE 3 GOLD ROCKS CRUSHING CHUNYA

IMAGE 4 GOLD ROCKS CRUSHING PLANT - CHUNYA

There is a need to establish dust exposure in small-scale mining in Tanzania, and estimate the risk of developing pulmonary diseases for artisanal mining workers.

LIVING CONDITIONS

In each of the four sites visited, the assessment team observed and documented the condition of living squatter miners dwell in. The communities are highly over crowded. Miners live in small rented rooms, and stays in numbers between four to twelve. Older settlements, such as Makongolosi and Itumbi (15 and 4 years) had mud housing, with minimal ventilation. Newer mining communities, Mbigwa and Selewe (two years and eight days), had plastic tent housing with zero ventilation. Over crowding was observed in newer mining communities compared to older settlements
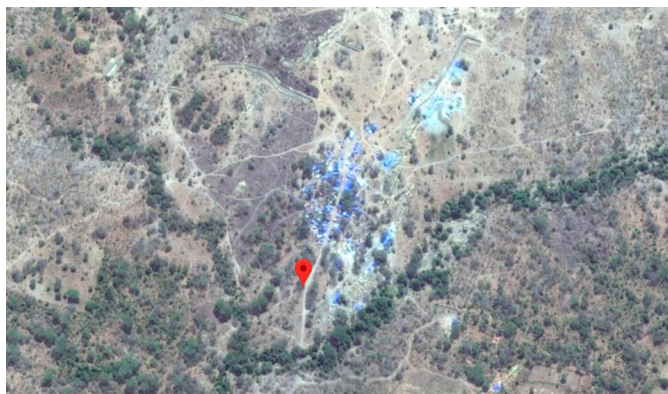
IMAGE 5 MBIGWA MINING COMMUNITY - SATELLITE IMAGE

IMAGE 6 PLASTIC TENT HOUSING AT MBIGWA MINING COMMUNITY - A

IMAGE 7 PLASTIC TENT HOUSING AT MBIGWA MINING COMMUNITY - B

BIOLOGICAL RISKS

Chunya district is primarily inhabited by mining and farming communities. The 2017 TB/ HIV co-infection stood at 70%[7] of all TB patients. The co-infection rate in Chunya is higher compared to other districts in Mbeya region, without mining activities. The higher rate of TB patients who are also living with HIV can be associated to mining activities. In visited mining communities, the number of females aged 15 and higher was very low compared to males. Another compelling fact is miners are leaving for long periods away from their families and living in an area with an active sex industry. This can fuel multiple concurrent partnership which is known to be a strong driver of HIV infection.

In-depth interviews with current miners suggests women in mining sites are associated with, among other things, commercial sex activities.

"Women in this area are engaged in selling food, running grocery stores as well as selling their own body". Foreman, 57 years – Mbigwa site.

There is a need to conduct integrated behavioral and biological survey in mining communities to establish factors associated with high TB/HIV rate.

BEHAVIOR

Most of the artisanal mining activities in Chunya are run by small groups of freelancer miners. They don't have a formal code of operation and lack basic protective gears. The assessment team observed miners are subjected to harsh working environment and long hours of exposure to respirable fine dust without proper protective gears. In-depth interviews with current miners, revealed lack of awareness on the need to use protective gears

"I haven't seen any of them (miners) using protective respiratory gears".
Food vendor, 26 years –
Mbigwa site

TB DOT CENTERS
Chunya DC

IMAGE 8 TB DOT CENTERS – CHUNYA DC

TB RISK DRIVERS

Another risk behavior which subjects' miners to TB, is fear of dismissal and delayed health seeking behavior due to lack of awareness. Even in communities close to health facilities, miners are reported to shy away from seeking health care.

LEGAL & ECONOMIC FACTORS

Artisanal miners in all four visited mining sites are do not have legal binding contract with mine owners. In-depth interviews with miners, and site managers reveals existence of non binding agreement between the two. When miners fall sick, they are likely going to miss a day at work, and therefore won't be paid.

TB CASE FINDING AND TREATMENT SERVICE CHALLENGES

Chunya does not have dedicated local mechanism to support community TB services. Such as ex TB patients, or sputum fixers. The district rely on HIV home based care (HBC) personnel to identify potential TB clients.

"In our district we depend on HIV/AIDS personnel at the community level, HBCs, to help identify susceptible TB patients, they were trained by Walter Reed. We don't have dedicated sputum fixer at community level, nor do we engage ex TB patients in any community activity". District TB cord, - Chunya DC.

When asked if they know any CSO in their community that address TB services, local leaders and miners said they know none.

TREATMENT AND LOST TO FOLLOW-UP RELATED TO MIGRATION

Lost to follow TB clients pose a challenge to treatment efforts made by health facilities. The migrating nature of miners in Chunya district is reported to be the underlying cause.

In our district lost to follow-up TB clients pose serious challenges to our our health system because they often migrate from one place to another. We do have a mechanism to trace them by phone, but sometimes they don't supply reachable phone number. District TB cord, - Chunya DC.

ACCESS TO SERVICES

TB outreach services to mining communities are conducted once per quarter by the TB unit at the district medical office, in collaboration with HIV unit with the help of Walter Reed, an NGO engaged in HIV/AIDS services. The service involves TB screening to susceptible clients[8].

In Chunya district, there are six DOT centers, namely Charangwa dispensary, Matundasi dispensary, Makongorosi health centre, Lupa-tingatinga health centre, Mtanila health centre and Chunya district hospital. However, the geographical size of the district, dwarfs the impact of these centers to ensure continuity of care in and near mining sites. With 48 known mining hotspots, the six DOT centers are not enough to carter the needs of TB sick miners.

Another challenge facing miners in accessing healthcare services is distance to testing facilities. There is only one testing facility in

During in-depth interviews, miners confirmed their short stay, sometimes less than two months in one area and frequent migrating paten, up to three times in two years, from one mining hotspot or region to another.

8   Manual of The National Tuberculosis and Leprosy Programme in Tanzania – pg 6.

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> *"I once worked at Makongolosi site, but didn't stay there for long, actually it's like I just passed through, then I moved to Itumbi site, stayed there for some time like two years, but now I have moved to this new site in Selewe".*
> Male Miner, 24 years – Selewe Site

Another cadre in the mining community that reported frequent migration include food vendors, who move from one area, especially newly mining areas.

> *"Other areas that I have worked as food vendor includes, Itumbi site – two (2) months, Mapipa site, twelve (12) months. While in these areas, I also worked as a miner".*
> Female food vendor, 29 years – Makongolosi site.

4 POTENTIAL TB RESPONSES

During data validation meeting, members of the Data for Action for TB vulnerable population task force proposed TB responses to address assessment findings.

REGIONAL AND DISTRICT LEVEL RESPONSES

1. To increase TB diagnostic facilities at the district level by specifically convene a meeting with regional and district hiring authorities and demonstrate the need to hire Lab technicians.

2. To commence community-based case finding and treatment adherence, by engaging CSO with relevant expertize at the regional and district level.

3. To lobby for local authority engagement to support and ensure legislative protections and adherence to occupational health and safety standards, such as control and monitoring of dust.

NATIONAL LEVEL RESPONSES

1. To inform TB in Mining services study using Chunya DC, formative assessment findings.

2. Scale TB in Mining interventions to more artisan mineworkers.

3. To plan for EPI study to inform country on the actual magnitude of TB in the mines.

4. Sensitize both local and international CSOs to engage in the TB in Mining services

5 COUNTRY ROAD MAP TO ADDRESS DATA GAPS FOR TB KEY POPULATIONS:

[TANZANIA]

DEVELOPING A QUANTITATIVE RESEARCH PROTOCOL OUTLINE

ACTIVITIES	POPULATION 1
SELECT KEY POPULATION • **WHICH KEY POPULATION?** • **WHERE?** • **SPECIFY ELIGIBILITY CRITERIA**	Informal Miners – Defined as someone who earns their living through excavating precision stones and minerals (e.g., Gold or Tanzanite) having worked in the mines for at least three months, 15 yrs of age or above, without an employment contract and using mechanical tools in mining living in Chunya, Mererani or Geita
OBJECTIVES • **WHAT DO YOU EXPECT TO MEASURE?**	Overall objective is to understand the TB epidemics amongst miners in Tanzania. Specific objectives • To estimate population size of informal miners in Tanzania • To determine TB epidemiology and pattern among mining populations in Tanzania. • To examine the quality and effectiveness (scope, coverage, health seeking/ behavioral change/impact) of current TB care and prevention services in mining community. • To review knowledge and capacity relating to TB identification and management of health providers working in mining areas. • To assess gender-related, legal & human rights and economic barriers barriers to tuberculosis (TB) prevention, diagnosis and treatment services in mining areas. • To measure TB prevalence amongst miners in Tanzania • To estimate magnitude of MDR amongst miners with TB cases. • To document treatment history, service access and treatment outcome among those who have ever received treatment. • To formulate key programmatic recommendations and develop specific priority plan of action to address TB in the mining.
RESEARCH QUESTIONS **(LIST THE DOMAINS BASED ON DATA GAPS)**	• What is the size of the informal miners in a location (Males Vs female)? • What is the quality and effectiveness (scope, coverage, health seeking/ behavioral change/impact) of current TB care and prevention services in mining community? • What is the level of knowledge and capacity related to TB identification and management of health providers working in mining areas? • What is the prevalence of TB and TB/HIV confection in mining communities? • What is the magnitude of MDR amongst miners with TB cases? • What are the gender-related, legal & human rights and economic barriers amongst miners? • What is the treatment success rate?
SAMPLING METHODS	Respondent Driven Sampling
SAMPLE SIZES	300 plus (Estimates only, based on (1) Known artisanal miners' population in three mining sites of Chunya, Geita and Mererani. (2) Comparison to HIV KP (female sex workers) RDS. Once Research Sites are confirmed, sample size will be calculated using accepted scientific methods such as the multiplier method.)
TESTING	TB, HIV and Silicosis

ETHICAL ISSUES	Ethical clearance is needed from the National Institute of Medical Research
ROLES AND RESPONSIBILITIES	Ministry of Health – NTLP • Leadership and stewardship • Ethical Clearance • Technical support • Provision testing equipment and related human resources CRG Tools Tanzania Task force • Review and validation of the findings • Oversight of the process. • Guidance on way-forward and issues faced during the process. Tanzania National Coordinating Mechanism (TNCM) • Source of funding • Technical support • Oversight of the funds EANNASO • Coordination • Technical personnel • Financial management Stop TB Partnership • Technical support • Review of the process
WRITE UP AND SUBMIT PROTOCOL	• Team of technical investigator • NTLP Program Manager • NTLP Research coordinator • NTLP TB Community coordinator • TIMS Coordinator • Ms. Agatha Mshanga • NTLP M & E Coordinator • Dr. Andrew Kilale (NIMR) • Dr. Liberate Mleoh • Dr. Cornel Wambura • Baraka Kaaya • EANNASO
RESOURCES (MONEY, TECHNICAL ASSISTANCE)	• Global Fund/Stop TB Partnership • Ministry of health, Community Development, Gender, Elderly and Children • EANNASO
TIME LINE (24 MONTHS)	24 months

KEY POPULATION: INFORMAL MINERS

ACTIVITIES	2018 1ST HALF (JAN-JUN)	2018 2ND HALF (JUL-DEC)	2019 1ST HALF (JAN-JUN)	2019 2ND HALF (JUL-DEC)
STAKEHOLDER MEETING	√			
DECISION ON ROLES AND RESPONSIBILITIES FOR SURVEY DESIGN	√			
STUDY PROTOCOL DEVELOPMENT	√			
FORMATIVE ASSESSMENT		√		
CONDUCT/ANALYZE FORMATIVE ASSESSMENT		√		
QUESTIONNAIRE DESIGN		√		
QUESTIONNAIRE PILOTING		√		
DESIGN OTHER MATERIALS		√		
TRANSLATE ALL MATERIALS FROM ENGLISH TO LOCAL LANGUAGE		√		
SUBMIT MATERIALS TO IRB		√		
RESPOND TO ETHICAL REVIEW QUESTIONS		√		
HIRING STAFF, FINDING SITES		√		
STAFF TRAINING		√		
DATA COLLECTION		√		
DATA CLEANING/RECODING			√	
ANALYSIS AND REPORT WRITING			√	
DISSEMINATION, EXTRAPOLATION				√

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7 ANNEXES

ANNEX 1

OUTCOME OF THE PRIORITIZATION PROCESS

TB VULNERABLE POPULATIONS TO CONSIDER	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5	SCORE 6	COMBINED SCORE TO FACILITATE PRIORITIZATION DISCUSSION	
	Estimated Contribution to the Country's TB Disease Burden (Active TB cases of all forms) 1 – Very Low (<1%) 2 – Low (1-3%) 3 – Medium (3-5%) 4 – High (5-10%) 5 – Very High (>10%)	Faced with Environment Risks (Over- crowded, poorly ventilated space, reside in zoonotic TB areas 0 - No 1 – Yes	Faced with Biology Risks (Reduced immunity, poor nutrition) 0 - No 1 – Yes	Faced with Behavior Risks (In/exhaling from/ into other's mouth, sharing smoking equipment) 0 - No 1 – Yes	Legal & Economic Barriers to Accessing Services (Criminalization, poverty) 0 - No 1 – Yes	Human Rights & Gender Barriers to Accessing Services (Stigma, discrimination) 0 - No 1 – Yes	Total Score (Sum of Scores 1-6, Max 10)	Prioritization Discussion and Rationale for Prioritized TB Vulnerable Populations
PEOPLE LIVING WITH HIV	5	0	1	0	0	0	6	2
REFUGEES	1	1	0	0	0	0	2	
INFORMAL MINERS	4	1	0	1	1	0	7	1
NOMADIC POPULATIONS	1	1	0	0	1	0	3	
PRISONERS & DETAINEES	2	1	0	0	0	0	3	6
PEOPLE WHO USE DRUGS	1	0	1	1	1	1	5	3
PEOPLE WITH ALCOHOL DEPENDENCY	1	0	0	0	0	0	1	
SMOKERS	1	0	0	1	0	0	2	
SEX WORKERS	1	0	1	0	0	0	2	
INDIGENOUS POPULATIONS	1	0	0	0	0	0	1	
PEOPLE WITH DIABETES	1	0	1	0	0	0	2	7
CHILDREN (UNDER 14 YEARS)	3	0	1	0	0	0	4	4
ELDERLY (ABOVE 55 YEARS)	2	1	1	0	0	0	4	5
HOSPITAL WORKERS	1	1	0	0	0	0	2	
PRISON WORKERS	1	1	0	0	0	0	2	
SEX WORKER CLIENTS	1	0	0	0	0	0	1	
FISHER FOLKS	1	0	0	1	0	0	2	
LONG DISTANCE TRUCK DRIVERS	1	1	0	0	0	0	2	
MINING COMMUNITIES	2	1	0	0	0	0	3	

ANNEX 2

DATA FOR ACTION FRAMEWORK TASKFORCE MEMBERS

TABLE 2 TASKFORCE MEMBERS

S/N	NAME	ORGANISATION
	Dr. Thomas W. Ntagazwa	NTLP
	Claudio Msengezi	CHESA
	Happiness Madunda	MUKIKUTE
	Joyce Mgombele	JHPIEGO /ENGENDERHEALTH - SAUTI
	Rose Olotu	KNCV
	Rodrick Mugishagwe	EANNASO
	Baraka Kaaya	CONSULTANT
	Dr. Liberate Mleoh	NTLP
	Dr. Allan Tarimo	NTLP
	Dr. Andrew Kilale	NIMR
	Olive Mumba	EANNASO

ANNEX 3

INTERVIEWS COMPLETED

TABLE 3 LIST OF IN-DEPTH INTERVIEWS COMPLETED

SELEWE SITE	
CURRENT MINERS	6
MINER OWNER / MANAGERS	1
AUXILIARY WORKERS	2
MAKONGOLOSI SITE	
CURRENT MINERS	4
EX - MINERS	2
MINOR MINERS	1
MINER OWNER / MANAGERS	1
AUXILIARY WORKERS	2
MBIGWA SITE	
CURRENT MINERS	4
EX - MINERS	1
MINOR MINERS	1
MINER OWNER / MANAGERS	2
LOCAL LEADERS	1
AUXILIARY WORKERS	2
ITUMBI SITE	
CURRENT MINERS	4
EX - MINERS	1
MINOR MINERS	1
MINER OWNER / MANAGERS	1
LOCAL LEADERS	1
AUXILIARY WORKERS	2
HEALTH MANAGERS	
DISTRICT TB COORDINATOR	1
DOT NURSE	1

DIRECT COUNT DATA COLLECTION FORM

VENUE ID NUMBER: _____   DATE FORM IS COMPLETED: ___/_____/____ (dd/mm/yy)

DATA COLLECTOR NAME(S): _____

START TIME (24 H CLOCK, HH:MM): __ __ : __ __

TOTAL INDIVIDUALS COUNTED THROUGH DIRECT COUNT

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Total: _____

TOTAL INDIVIDUALS PREVIOUSLY COUNTED

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Total: _____

DATA COLLECTION TOOLS

DODOSO KWA WATOA HABARI (KEY INFORMANT) WACHIMBAJI
PRIMARY KEY INFORMANTS INTERVIEW GUIDE
HALI NA MAZINGIRA HATARISHI YA KIFUA KIKUU (TB)

VENUE ID NUMBER: _____   DATE INTERVIEW IS COMPLETED: ___/____/___ (dd/mm/yy)

DATA COLLECTOR NAME(S): _____

START TIME (24 H CLOCK, HH:MM): __ __: __ __

VENUE AREA :
NAME OF VENUE/HOTSPOT_____)

UTANGULIZI

Asante kwa kukubali kushiriki katika usaili huu. Kumbuka kuwa majibu yako yatakuwa siri na kuwa unaweza kuacha kuendelea na usaili wakati wowote.

1. Tafadhali naomba unielezee kuhusu maeneo unayoyajua yenye wachimbaji wadogowadogo katika wilaya hii ya **Chunya**?

    (orodhesha maeneo yote (Geographical locations) anayotaja. Dadisi kuhakikisha kuwa anachukua muda kukumbuka maeno yote na kuyataja.

2. Sasa nitakuuliza kuhusu kila eno ulilotaja hapo juu nikianzia na uliyo tangulia kutaja hadi ya mwisho. *(uliza maswali haya hapa chini kwa kila eneo alilolitaja)*

    a. Ni aina/makundi gani ya watu wanapatikana katika maeneo hayo ya uchimbaji? *(ulizia kuhusu uwepo wa watoto, wazee, wanawake na wahamiaji kutoka mataifa mengine)*
    b. Je wachimbaji katika maeneo haya wanafanya kazi wakiwa na mikataba au wanafanya kazi na kulupwa malipo ya siku.
    c. Ni aina gani ya shughuli (*za uchimba na nyinginezo*) zinazoendela katika (taja eneo)
    d. Ni huduma zipi za afya zinapatikana katika maeneo ya wachimbaji (*dodosa kuhusu TB, HIV kama atakuwa hakutaja*)
    e. Kwa ufahamu wako unadhani wachimbaji wadogowadogo na wale wanaokaa katika maeneo ya uchimbaji wanatumia huduma hizi? Unadhani zinapatikana kwa gharma wanayoiweza.
    f. Ni sababu zipi au vikwazo gani vinawafanya wachimbaji wadogowadogo wasipate huduma za afya.
    g. Unadhani wachimbaji wadogowadogo wanahitaji msaada gani ili waweze kupunguza uwezekano wakupata magojwa ya kifua kikuu katika kazi zao?

3. Sasa napenda unisaidie kuorodhesha orodha ya maeneo madogo ya uchimbaji katika eneo hili [*tengeneza jedwali lenye kolamu 5 likiwa na majina ya kamabi za uchimbaji kwenye kolamu ya kwanza*]

    • Nitajiwe makambi/machimbo unayoyajua katika eneo hili? *[orodhesha yote atakayoyataja. Ikiwa jedwali halitoshi tumia karatasi nyinine]*
    • Tafadhali niambie idadi ya watu wanaopatikana katika kila eneo (wanaume na wanawake) unaoweza kukadiria wanaopatikana katika kila eneo ulilolitaja hapa. [jaza kolamu ya pili]
    • Tafadhali niambie, unakadiria machimbaji pekee wanaopatikana katika kila eneo ulilonitajia kila siku ni wangapi? Na kati ya hawa wanawake ni wangapi?
    • Ni wangapi kati ya hawa ni watoto umri chini ya miaka 18. na kati ya hawa wanawake ni wangapi? [jaza kolumu ya 5]

S/N	1	2		3		4	
	ENEO (CHIMBO)	IDADI YA WATU WOTE		IDADI YA WACHIMBAJI		IDADI YA WATOTO*	
		ME	KE	ME	KE	ME	KE
1							
2							
3							
4							
6							
7							
8							

* watoto ni wale walio na umri chini ya miaka 15.

4. Ni huduma gani kwa wachimbaji unazifahamu zinapatikana katika maeneo haya? Dodosa: Upimaji wa wa Virusi vya Ukimwi, upimaji wa Kifua kikuu, Tiba ya Dawa, Huduma za kisheria.

5. Je wewe unazitumia huduma hizo? Ni ipi kati ya hizo? Mara ngapi? Vipi kuhusu watu wengine? Unadhani wanazitumia?

6. Ni aina zipi za huduma unadhani hazipatikani wakati zinahitajika?

7. Ni vizuizi gani unadhani vinakufanya wewe au mtu mwingine asiweze kupata huduma za afya?

8. Je watu wanapohisi kuwa wanaumwa au wanadalili za kumumwa huwa inawachkua kipindi gani kabla hawajaamua kwenda kupata matibabu?

9. Kuna mtu yeyote katika eneo hili aliwahi kupata maambukizi ya kifua kukuu. Kwa kiwango gani watu wanagundulika kuwa na kifua kikuu katika eneo lenu?

10. Wakati wa kufanya kazi za uchimbaji wewe au watu wengine huwa mnatumia vifaa vya kuzuia vumbi kwenye midomo na pua.

11. Kwa maoni yake unadhani ni kwa kiwango gani wachimbaji wadogo wadogo wa eneo hili wanatumia sigara au kitu chochite kile cha kuvuta moshi kama tumbaku, bangi nk.

12. Unadhani wachimbaji wadogowadogo wanahitaji msaada gani ili waweze kupunguza uwezekano wakupata magojwa ya kifua kikuu katika kazi zao?

13. Kabla ya wewe kuja katika eneo hili la uchimbaji, ulishawahi kufanya kazi za uchimbaji katika eneo jingine tofauti na hili; kama ndiyo, maeneo mangapi na kwa muda gani? Je kuna watu ambao unawajua kabla ya hapa walikuwa wakijihusuisha na uchiumbaji maeneo mengine?

14. Unadhani katika maeno ya wachimbaji kuna watu wanaotumia dawa za kulevya (Cocaine au heroin-UNGA)? Kuna watu wanatumia dawa a kulevya kwa njia ya kujidunga sindano?

DATA COLLECTION TOOLS

DODOSO KWA WATOA HABARI (KEY INFORMANT) WASIO WACHIMBAJI
SECONDARY KEY INFORMANTS INTERVIEW GUIDE
HALI NA MAZINGIRA HATARISHI YA KIFUA KIKUU (TB)

VENUE ID NUMBER: _____ DATE INTERVIEW IS COMPLETED: ___/____/___ (dd/mm/yy)

DATA COLLECTOR NAME(S): _____

START TIME (24 H CLOCK, HH:MM): __ __: __ __

VENUE AREA :
NAME OF VENUE/HOTSPOT_____)

Utangulizi
Asante kwa kukubali kushiriki katika usaili huu. Kumbuka kuwa majibu yako yatakuwa siri na kuwa unaweza kuacha kuendelea na usaili wakati wowote.

1. Tafadhali naomba unielezee kuhusu maeneo unayoyajua yenye wachimbaji wadogowadogo katika wilaya hii ya **Chunya**?

    (orodhesha maeneo yote (Geographical locations) anayotaja. Dadisi kuhakikisha kuwa anachukua muda kukumbuka maeno yote na kuyataja.

2. Sasa nitakuuliza kuhusu kila eno ulilotaja hapo juu nikianzia na uliyo tangulia kutaja hadi ya mwisho. *(uliza maswali haya hapa chini kwa kila eneo alilolitaja)*
    a. Ni aina/makundi gani ya watu wanapatikana katika maeneo hayo ya uchimbaji? *(ulizia kuhusu uwepo wa watoto, wazee, wanawake na wahamiaji kutoka mataifa mengine)*
    b. Je wachimbaji katika maeneo haya wanafanya kazi wakiwa na mikataba au wanafanya kazi na kulupwa malipo ya siku.
    c. Ni aina gani ya shughuli (*za uchimba na nyinginezo*) zinazoendela katika (taja eneo)
    d. Ni huduma zipi za afya zinapatikana katika maeneo ya wachimbaji (*dodosa kuhusu TB, HIV kama atakuwa hakutaja*)
    e. Kwa ufahamu wako unadhani wachimbaji wadogowadogo na wale wanaokaa katika maeneo ya uchimbaji wanatumia huduma hizi? Unadhani zinapatikana kwa gharma wanayoiweza.
    f. Ni sababu zipi au vikwazo gani vinawafanya wachimbaji wadogowadogo wasipate huduma za afya.
    g. Unadhani wachimbaji wadogowadogo wanahitaji msaada gani ili waweze kupunguza uwezekano wakupata magojwa ya kifua kikuu katika kazi zao?

1. Sasa napenda unisaidie kuorodhesha orodha ya maeneo ya uchimbaji katika wilaya hii
    • Nitajiwe   makambi/machimbo unayoyajua katika eneo hili? *[orodhesha yote atakayoyataja. Ikiwa jedwali halitoshi tumia karatasi nyinine]*
    • Tafadhali niambie idadi ya watu wanaopatikana katika kila eneo (wanaume na wanawake) unaoweza kukadiria wanaopatikana katika kila eneo ulilotaja hapa. [jaza kolamu ya pili]
    • Tafadhali niambie, unakadiria machimbaji pekee wanaopatikana katika kila eneo ulilonitajia kila siku ni wangapi? Na kati ya hawa wanawake ni wangapi?
    • Ni wangapi kati ya hawa ni watoto umri chini ya miaka 18. na kati ya hawa wanawake ni wangapi? [jaza kolumu ya 5]

S/N	1	2		3		4	
	ENEO	IDADI YA WATU WOTE		IDADI YA WACHIMBAJI		IDADI YA WATOTO*	
		ME	KE	ME	KE	ME	KE
1							
2							
3							
4							
6							

watoto ni wale walio na umri chini ya miaka 15.

WAULIZE WATUMISHI WA MASHIRIKA YASIYO YA KISERIKARI

1. Elezea maingiliano/Mahusiano ambayo shirika lako linayo na wachimbaji wa madini wadogowadogo; ni huduma gani mnawapa, kama kuna huduma yoyote?

2. Ni wachimbaji wangapi wanapata huduma zenu kila mwezi?

3. Ni jinsi gani mnawafikia wachimbaji wadogowadogo?

4. Unadhani kuna vizuizi gani vinavyowazuia wachimbaji wadogowadogo kupata huduma za afya.

5. Unafahamu shirika jingine linalotoa huduma za afya kwa wachimbaji wadogowadogo katika eneo hili?

6. Ni huduma zipi za afya ambazo wachimbaji wadogowadogo wanazihitaji zaidi?

DATA COLLECTION TOOLS

STRUCTURED OBSERVATION GUIDE

VENUE ID NUMBER: _____   DATE INTERVIEW IS COMPLETED: ___/____/___ (dd/mm/yy)

DATA COLLECTOR NAME(S): _____

START TIME (24 H CLOCK, HH:MM): __ __: __ __

VENUE AREA :
NAME OF VENUE/HOTSPOT_____)

VENUE TYPE: (CHECK ONE)
☐   Mining site
☐   Mining processing
☐   Market
☐   Dwelling
 Business establishment (specify: _____)
 Other (specify: _____)

OBSERVATION VISIT #: _____
☐   Single observation visit
☐   Multiple observation visits
          1st   2nd 3rd

GPS COORDINATES OF OBSERVATION SETTING
Latitude: _____
Longitude: _____

OBSERVATION START TIME (24-HOUR CLOCK, HH:MM) ___ ___: ___ ___

TOTAL (ESTIMATED) NUMBER OF PERSONS PRESENT: _____
TYPES OF PERSONS PRESENT (CHECK ALL THAT APPLY):

☐   Elderly men (65+ yrs)   Elderly women (65+ yrs)
☐   Adult men (18-64 yrs)   Adult women (18-64 yrs)
☐   Adolescent boys (12-17 yrs) Adolescent girls (12-17 yrs)
☐   Male children (0-11 yrs)   Female children (0-11 yrs)

1.   What is the primary activity taking place? (Describe any events taking place at or near the setting (e.g. bartering)
2.   For mining and mining processing. Describe the people, activity taking place. Describe your observations of those who work there take preventive measure to prevent them from TB infection (Dust control and other protective gears) detail in physical environment and setting that positively or negatively affect TB acquisition.
3.   For Dwelling. Describe the people, describe your observations of the nature of housing, ventilation, distance from where mining and mining process take place
4.   Comment on social behaviors and social nitration among the people present
        a.   Alcohol use and type of alcohol used
        b.   Public smoking practice
5.   Comment hygiene and environment.
6.   Other comments:

OBSERVATION END TIME (24-HOUR CLOCK, HH:MM) ___ ___: ___ ___

ANNEX 5

TABLE 4 RANGE (MIN, MAX, MEDIAN) OF POPULATION SIZE ESTIMATES IN EACH MINING HOTSPOT

MINING HOTSPOT	MINIMUM	MAXIMUM	MEDIAN
ISENYELA	200	380	290
MAPOGORO	300	450	375
MBIGWA	630	890	760
SANYO	75	160	118
SELEWE	320	500	410
KUWAIT	70	110	90
KWA HENYA	25	45	35
KWA SANGA	35	55	45
HAONGA	15	35	25
HURIBI	40	60	50
MASANZA	35	68	52
KASAKALAWE	340	405	373
MAKONGOROSI	520	800	660
MANYANYA	25	40	33
MAPELE	70	90	80
MAPIPA	900	1300	1100
MTASHA	870	1450	1160
MTO KIPONIA	80	130	105
MTO MAKONGOROSI	85	120	103
MWAOGA	1500	2000	1750
SAZA	85	130	108
STAMICO	60	90	75
ITUMBI	690	1300	995
KWA KIBUSI	28	70	49
MANYUKI	25	30	28
MATONDO	380	400	390
MATUNDASI	420	600	510
UJERUMANI	55	90	73
CHANDELE	15	30	23
GEPU	60	100	80
MASHARIKI	65	92	79
MBUGANI	600	830	715
MWAMWINGA	55	98	77
NDOROBONI	460	680	570
PAULO	20	30	25
GANE MINING	30	50	40
LANGWA	100	130	115
MKAANJIWA	300	440	370
MREMBERI	60	90	75
PATAMELA	70	132	101
GODIMA	75	110	93
IGODIMA	45	85	65
IZUMBI	800	1200	1000
KALUNGU	300	450	375
MERERANI	1800	2200	2000
MWANZO MGUMU	160	350	255
SANGAMBI	890	1500	1195
SHOGHA	300	465	383