TIMS CRG ASSESSMENT

AND

OPERATIONAL PLANNING IN

SIX SADC COUNTRIES

Prepared by

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FOREWORD

Tuberculosis (TB) has long been a pressing concern within the mining sectors of Southern African nations, including Angola, Botswana, Eswatini, Madagascar, Malawi, and Zimbabwe. Recognizing the gravity of this issue, the Heads of State of the Southern African Development Community (SADC) took decisive action by signing the Declaration on TB in the Mines in 2012. This pivotal Declaration called upon the SADC Ministers responsible for Health, Finance, Human Rights, Social Welfare, Migration, Local Government, Labour, and Mining to initiate the implementation of the Declaration and closely monitor its progress. Consequently, a SADC regional Protocol was developed to serve as a guiding document for the effective implementation of the outlined measures.

Since then, numerous partners have come forward to support these countries in their efforts to address TB in the mines, with the Global Fund to Fight TB, HIV, and Malaria emerging as a major contributor to this endeavour. The establishment of a Regional Coordination Mechanism (RCM) has been instrumental in facilitating the successful execution of two previous phases of Tuberculosis in the Mining Sector Project (TIMS), covering 10 SADC countries. Buoyed by the positive impact of the project and the commitment to continue the momentum, the Global Fund has generously provided additional funding of US$10.5 million to propel the regional TB in the mines initiatives forward and complement the efforts at the national level. We are now at the end of Phase III of the TIMS project, which began in July 2021 and will continue until June 2024. This phase encompasses all 16 countries in the SADC region, including Angola, Botswana, Eswatini, Madagascar, Malawi, and Zimbabwe. The participation of these nations in this phase is a significant step in our collective mission to combat TB in the mining sector and improve the health and well-being of those affected by the disease and working conditions.

It is with great pleasure and a sense of responsibility that we present the results of the human rights and gender equality assessments in TIMS across these six countries. This comprehensive study represents a significant milestone in our ongoing commitment to ensuring that every miner, ex-miner, family member, and community member, regardless of their gender or background, enjoys equal access to high-quality TB and related occupational health and safety services. We express our gratitude to all contributors who participated in these assessments, and we make a call for unified efforts to translate the findings into meaningful actions and policies, ensuring that everyone's right to health is respected, regardless of their country, gender, or background. Together, we can create a

future where the mining sectors of these nations are safe, equitable, and free from the burden of TB.

ACKNOWLEDGEMENTS

LIST OF ACRONYMS AND ABBREVIATIONS

AI	Artificial Intelligence
AGYW	Adolescent Girls and Young Women
AMR	Adult Mortality Rate
ASMs	Artisanal and Small-Scale Miners
CBOs	Community-Based Organizations
CLM	Community-Led Monitoring
CSOs	Civil Society Organizations
DHS2	Demographic and Health Survey 2
DOTS	Directly Observed Treatment Short-course
ECSA-HC	East Central and Southern Africa Health Community
FGD	Focus Group Discussion
HCWs	Health Care Workers
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
KII	Key Informant Interview
LMICs	Low- and Middle-Income Countries
MAF	Multi-Sectoral Accountability Framework
NCDs	Non-Communicable Diseases
NTCP	National TB Control Programme
OHSCs	Occupational Health Service Centers
PPE	Personal Protective Equipment
RCM	Regional Coordination Mechanism
SADC	Southern African Development Community
SDG	Sustainable Development Goals

TB	Tuberculosis
TIMS	Tuberculosis in the Mining Sector
WHO	World Health Organization

EXECUTIVE SUMMARY

Introduction

The Tuberculosis in the Mining Sector (TIMS) Community, Rights, and Gender (CRG) assessment was conducted in six Southern African Development Community (SADC) countries: Angola, Botswana, Eswatini, Madagascar, Malawi, and Zimbabwe. The assessment aimed to identify and address gender and human rights barriers impacting access to TB services among key populations in the mining sector, including miners, ex-miners, their families, and communities. These populations are prioritized due to their increased vulnerability to TB, stemming from factors such as high TB exposure risk, limited access to healthcare services, and socio-economic challenges.

TIMS CRG, Objectives and Methodology

The TIMS Community Rights and Gender (CRG) assessment aimed to identify and address gender and human rights barriers impacting TB service access in the mining sector. Conducted between late 2021 and early 2024 in Angola, Botswana, Eswatini, Malawi, Madagascar, and Zimbabwe, the assessment employed a participatory and multisectoral approach.

Key Findings

❖ TIMS Legal and Policy Environment
- o **Legislative Gaps**
  Angola, Eswatini, Malawi, and Zimbabwe have not ratified the ILO Convention No. 155, which establishes a coherent national policy for occupational safety and health (OSH). Additionally, Angola, Botswana, and Eswatini lack ratification of conventions protecting the rights of migrant workers, women, and promoting vocational rehabilitation for disabled persons. While Eswatini and Zimbabwe's mining legislation requires explicit inclusions on health and safety standards, Malawi and Madagascar lack comprehensive mining occupational health regulations and disease compensation frameworks. Botswana's mining legislation is devoid of clear occupational health provisions or pathways for compensating mining-related occupational diseases. Eswatini's legislation lacks permissible exposure limits for hazardous substances, leaving miners vulnerable to various occupational hazards without adequate protection.
- o **Informal Mining Recognition**

Informal or artisanal mining is highly prevalent in Angola, Madagascar, Malawi, and Zimbabwe, posing significant challenges in terms of safety regulations, enforcement, and access to healthcare for miners. In these countries, informal mining operations often lack legal oversight, leading to hazardous practices and inadequate safety measures. Miners work in unstable conditions without proper training or safety equipment, resulting in higher rates of accidents and occupational diseases. Botswana's Workmen's Compensation Act does not cover National Artisanal Small Miners (ASM) activities like quarrying, sand extraction, and dusty operations, hindering compensation access for both local and returning miners from South Africa. Similarly, despite a 2017 policy review in Zimbabwe, informal miners still lack legal recognition and compensation mechanisms.

- o **Cross-border Challenges**
  Cross-border movement of miners hinders TB control due to poor cross-border health regulations and enforcement; and poor coordination between countries. This mobility hinders the continuity of TB care for miners and ex-miners with TB.
- o **Policy Implementation Gap**
  Despite existing policies, the study identified a significant gap in their implementation, particularly in remote mining areas due to lack of resources such as mobile vans, test kits, and trained health personnel; weak enforcement mechanisms, and insufficient training of health workers.

❖ TIMS Community
- o **Priority Key Populations for TB in the Mining Sector**
  The assessment identified current miners, ex-miners, and their communities as priority populations due to high TB prevalence rates. Miners face increased TB risks due to prolonged exposure to silica dust and cramped working conditions.
- o **Community Dynamics and TB Impact**
  Mining communities are characterised by high mobility across regions and countries, poor living conditions, and limited access to healthcare, exacerbating TB spread and impact. Ex-miners often return to rural areas with inadequate healthcare services, further complicating TB management.
  - o *Current Miners*
    Miners face direct exposure to TB due to poor ventilation, high dust levels, and inadequate protective measures. Occupational hazards and unsafe working conditions contribute to the high TB burden among miners.
  - o *Ex-Miners*

Ex-miners remain vulnerable to TB due to prolonged exposure during their working years and often lack access to continuous healthcare post-employment. This population frequently experiences difficulties accessing TB diagnosis and treatment services.

- o **TIMS Community Participation and Engagement in the TB Response**
  Active community participation is crucial for effective TB management. However, the engagement of mining communities in TB programs is often limited by stigma, discrimination, and a lack of awareness.

❖ Right to Health
- o **Availability**
  There were resource constraints in Angola, Madagascar, and Zimbabwe, leading to inadequate TB service availability, including frequent stockouts of essential medicines and limited healthcare infrastructure.

- o **Accessibility**
  Geographical barriers and high transportation costs significantly hinder miners' access to TB healthcare facilities, particularly in Angola, Malawi, and Madagascar. Informal miners often face additional challenges due to their illegal status and fear of discrimination when accessing the basic occupational health service package.

- o **Acceptability**
  Stigma and discrimination against TB patients, often linked to misconceptions around its association with HIV/AIDS, deter miners from seeking timely diagnosis and treatment. Cultural beliefs and traditional practices also conflict with modern TB protocols, reducing service acceptability.

- o **Quality**
  Quality of care is compromised by resource constraints, inadequate healthcare infrastructure, and shortages of essential medicines and diagnostics. These issues are prevalent in Angola, Botswana, and Madagascar.

- o **Stigma and Discrimination**
  Stigma against TB patients, especially those with multidrug-resistant TB (MDR-TB), is a significant barrier to care. This stigma is exacerbated by cultural misconceptions and discriminatory practices by some healthcare workers within healthcare settings.

- o **Entitlement**

There are significant gaps in miners' understanding of their labour rights, leading to challenges in accessing appropriate health and safety measures and fair compensation for occupational diseases.

- o Poor Working Conditions and Occupational Hazards
  Miners face precarious working environments and occupational hazards, such as dust exposure and inadequate protective equipment. These conditions are particularly severe in informal mining operations.
- o Child Labour Prevalence
  Child labour in mining communities, especially in Angola, Madagascar, and Zimbabwe, poses severe health risks and exacerbates entitlement challenges for young miners.

❖ Gender
- o **Cultural Roles and Norms**
  Cultural norms in Angola, Botswana, Eswatini, and Zimbabwe discourage men from seeking timely TB care due to associations of illness with weakness. Women are more proactive in utilizing health services but face increased risks due to caregiving roles.
- o **Access to Resources**
  Limited educational and economic opportunities for women restrict their access to healthcare resources and decision-making autonomy. Transportation and financial barriers further impede women's ability to access TB services in Eswatini, Madagascar, and Zimbabwe.

Recommendations
❖ Intervention Area 1: Strengthening the TIMS Policy and Regulatory Framework
- o Policy Integration and Harmonization:
  - o Integrate national TIMS advocacy plans, health and safety plans, and community rights and gender plans into a cohesive costed action plan in Angola.
  - o Harmonize TB policies, occupational health and safety policies, public health acts, and mining codes to be rights-based and gender-sensitive in Eswatini.
  - o Finalize and disseminate the occupational health and safety policy by the end of 2024 in Botswana.
- o Legal and Regulatory Reforms:
  - o Advocate for the inclusion of TB and silicosis in occupational health and safety laws as compensable occupational diseases in Angola.
  - o Finalize and disseminate employment protection legislation recognizing TB as an occupational disease among miners in Malawi.

- o Amend laws to ensure health benefits for migrants, informal, and contractual miners across the region.
- o Policy Advocacy and Ratification
  - o Advocate for the ratification of key international labor and safety conventions in Madagascar and Eswatini.
  - o CSOs should advocate for amendments to the Occupational Safety and Health (OSH) Act to align with international standards in Eswatini.
- o Capacity Building and Stakeholder Engagement
  - o Enhance resources and legal capacities of regulatory bodies to enforce safety standards in Zimbabwe.
  - o Update training packages and provide regular training sessions for community health workers and relevant stakeholders across the region.
- o Community and Economic Support
  - o Formulate guidelines for social protection programs and economic empowerment initiatives for ex-miners and their families.
  - o Develop guidelines for social contracting to recognize and fund community-led responses across the region.
- o Cross-border and Regional Collaboration
  - o Develop bilateral agreements and harmonize health regulations for migrant miners across borders.
  - o Promote regional cooperation to address the cross-border nature of TB in the mining sector.
- o Infrastructure Development
  - o Establish frameworks for permanent health facilities and mobile units in mining areas to improve access to services.

- ❖ Intervention Area 2: Improving Programmatic Management of TIMS
  - o Expansion and Accessibility of Health Services
    - o Procure mobile occupational health service trucks and establish mobile OHSCs in Angola.
    - o Expand OHSCs and establish new units in Eswatini and Malawi.
  - o Digitalization and Efficiency
    - o Digitalize care, treatment, compensation, and social protection processes using AI and portable X-ray machines in Angola and Madagascar.
  - o Training and Capacity Building
    - o Train Community Health Workers (CHWs) in using AI and X-ray technology in Angola.
    - o Update training materials and conduct seminars on human rights and gender-related issues in Botswana and other regions.
  - o Community Engagement and Rights Awareness

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- o Conduct "know your rights" campaigns and demand creation activities in Angola and other regions.
  - o Launch information campaigns to foster health-seeking behaviours in Zimbabwe.
  - o Occupational Health and Safety
    - o Review infection control guidelines, conduct assessments, and provide PPE in Angola.
    - o Develop Active Case Finders program with a rights-based approach in Eswatini.

- ❖ Intervention Area 3: Eliminating TIMS-Related Stigma and Discrimination
  - o Integration Community Awareness and Educational Campaigns
    - o Integrate TIMS stigma-related findings into existing HIV anti-stigma programs in Angola.
    - o Conduct community-based awareness campaigns to combat stigma and dispel myths surrounding TB.
  - o Network and Peer Support
    - o Establish a network of gender-sensitive TIMS survivors' champions and support groups for peer-to-peer support in Angola, Botswana, and Madagascar.
  - o Healthcare Worker Training
    - o Train healthcare workers on human rights, medical ethics, confidentiality, and non-judgmental communication skills in Angola, Zimbabwe, and other regions.
  - o Legal and Policy Protections
    - o Develop legal and policy protections for people affected by TB to be free from stigma and discrimination in Eswatini.

- ❖ Intervention Area 4: Intensifying Support for a Gender-Sensitive and Gender-Transformative Response to TIMS
  - o Strengthening Women's Associations Capacity Building and Economic Empowerment
    - o Establish and support Women in Mining Associations focusing on advancing and empowering women in the mining sector.
    - o Conduct needs assessments and develop tailored income generation packages for spouses of miners.
  - o Advocacy, Awareness, and Engagement
    - o Support gender-focused Civil Society Organizations (CSOs) and sub-Key Population (KP) organizations in engaging in regional and global TB initiatives.
    - o Advocate for policies advancing gender equity, representation, and pay equity within the TB workforce and service delivery.
    - o Conduct community campaigns to promote male involvement in health decision-making
    - o Encourage mining companies to support equal job opportunities for women
  - o Integration of Traditional Healthcare Practices and Gender-Sensitive Service Delivery

- o Integrate traditional healthcare practices into the formal healthcare system through education and awareness-raising.
- o Implement gender-sensitive demand creation strategies for TB preventive therapy services.

❖ **Intervention Area 5: Strengthening Partnerships with Key Stakeholders**
  - o Strengthening Civil Society and Key Population Engagement
    - o Partner with influential community organizations to enhance engagement and support for TB initiatives.
    - o Mobilize resources by organizing donor meetings to secure support for TB programs.
  - o Establishing Coordination Frameworks and Multi-Sectoral Collaboration
    - o Create National TB Platforms for multi-sectoral collaboration, addressing socio-economic factors in the mining sector.
    - o Advocate for the involvement of Key Populations in Global Fund Country Coordinating Mechanisms and develop collaborative frameworks.
    - o Reactivate national TB CSO Networks and establish National Stop TB Partnerships for coordination and communication.
  - o Community Engagement, Support Systems, and Access to Healthcare
    - o Develop networks of TIMS survivors' champions and support groups for peer-to-peer support.
    - o Ensure accessible healthcare facilities near mining areas and develop community-based health insurance schemes.
    - o Engage women in policy development and implementation processes related to child labour and healthcare in mining communities.

❖ **Intervention Area 6: Monitoring and Evaluation**
  - o Development of Indicator Matrices and Accountability Frameworks
    - o Engage consultant to create Indicator Matrix and Accountability Framework, including TB stigma indicators.
    - o Set up oversight committees and strengthen compliance measures.
  - o Community-Led Monitoring (CLM) and Data Integration
    - o Implement real-time Community-Led Monitoring (CLM) for social accountability, disaggregated by age, gender, key populations.
    - o Integrate TIMS Human Rights and Gender indicator matrix into national CLM system.
    - o Enhance existing CLM system to incorporate TB key populations.
    - o Develop detailed CLM Plan for community engagement, feedback mechanisms, data collection.
  - o Regular Monitoring, Evaluation, and Research Activities

- o Monitor and evaluate implementation of TIMS CRG action plan.
    - o Conduct mid-term and end-of-program evaluations.
    - o Implement robust M&E system to track integrated TB strategies.
    - o Develop monitoring program to assess silica levels and create Air Quality Index.
    - o Conduct KAP study on community attitudes towards TB.
    - o Conduct periodic TB legal and human rights scorecard analyses.
    - o Fund TB survivors and CSOs to monitor and report human rights violations.
    - o Conduct TB stigma assessment studies to guide interventions.
    - o Ensure updated tools to capture sex-disaggregated TB incidence data.
    - o Adopt real-time Community-Led Monitoring for social accountability.
    - o Conduct research on barriers faced by Adolescent Girls and Young Women.
    - o Develop rights-based M&E framework for TB interventions.
    - o Establish costed sustainability plans for projects and interventions.
  - o Cross-Sectoral and Cross-Border Collaboration
    - o Develop protocols for data collection, analysis, and exchange between Ministries.
  - o Targeted Interventions for Key Populations
    - o Initiate TB Key and Vulnerable Population size estimations.
    - o Ensure TB programs reach Key and Vulnerable Populations for targeted interventions.

1. Introduction

The Tuberculosis in the Mining Sector in Southern Africa (TIMS) initiative is a regional grant aimed at coordinating tuberculosis (TB) control efforts across multiple countries in the Southern African Development Community (SADC) region. Financed by the Global Fund and overseen by the Regional Coordination Mechanism (RCM)[1], Phases 1 and 2 targeted 10 SADC countries to address TB determinants in the mining sector by integrating infrastructure, processes, and systems into national frameworks. Phase III (TIMS III) aims to alleviate the TB burden by tackling issues such as working and living conditions, mobility, compensation, stigma, and TB services among key populations (KPs) - miners, ex-miners, their families, and mining communities - across all 16 SADC countries[2]. Implemented by the East, Central, and Southern Africa Health Community (ECSA-HC), in collaboration with member states, the initiative strives to meet the SDG 2030 targets by ensuring KPs have access to quality TB prevention and treatment services, alongside improved living and working conditions.

During Phase 1, human rights and gender barriers emerged as significant obstacles to accessing social services, including healthcare and compensation, especially within the mining sector. To address these challenges, a Community, Rights, and Gender (CRG) approach has been adopted to enhance KPs' participation in program and policy processes, integrating gender and human rights concerns into TB control interventions. Despite this effort, many SADC countries have yet to assess and integrate human rights and gender considerations into their national plans and strategies for TB and occupational disease control among mining KPs.

Consequently, a TIMS Community, Rights, and Gender (CRG) Assessment was conducted in six selected countries - Angola, Botswana, Eswatini, Malawi, Madagascar, and Zimbabwe - between late 2021 and early 2024. These assessments aimed to identify and address barriers hindering mining communities' access to TB and occupational health services, with a focus on the level of community engagement, human rights and gender-related challenges. Sthands Consulting was commissioned by ECSA-HC to conduct these CRG assessments, to identify barriers, and to develop an operational guide for CRG integration.

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[1] https://www.theglobalfund.org/en/news/2019-10-17-sharp-upturn-achieved-in-finding-people-with-tb/

[2] https://tims.ecsahc.org/wp-content/uploads/2022/08/SpotTB-TIMS-CBM-Q9-2020-Report-Version-3.pdf

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2. Context
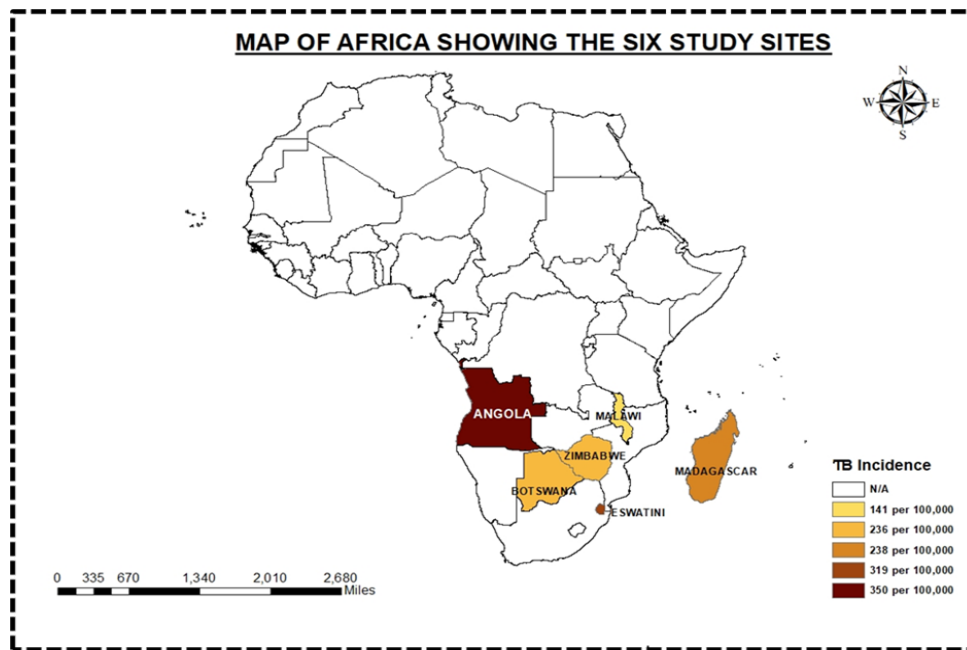
Figure 1: Study Countries

Table 1 provides an overview of key facts related to the country profile, mining industry, and tuberculosis burden across the six countries in the African region - Angola, Botswana, Eswatini, Madagascar, Malawi, and Zimbabwe (see Figure 1). These nations share similarities in terms of grappling with public health challenges like HIV/AIDS and tuberculosis, while also possessing significant mineral resources that contribute to their economies through mining activities.

Table 1: Country Summary

Country	Country Profile [3]	Mining Sector	Tuberculosis Situation [4]
Angola	• 2023 Population: 36.6 million • 2023 Life expectancy: 62 years	• Major Mining commodity: Diamonds • 2021 Mining GDP contribution[5]: 1.6%	• Prevalence Rate: 333 per 100,000 • HIV-positive TB incidence rate: 26 per 100,000 • 2022 TB treatment coverage: 56% • Contributing Factors:

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[3] https://data.worldbank.org/

[4] https://worldhealthorg.shinyapps.io/tb_profiles/

[5] https://furtherafrica.com/2022/05/18/angola-biggest-mines-by-production/

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	● 2023 GDP Growth: 3%		○ Poverty ○ Unemployment ○ Overcrowding
Botswana	● 2023 Population: 2.6 million ● 2023 Life expectancy: 66 years ● 2023 GDP Growth: 5.8%	● Major Mining commodity: Diamonds ● 2021 Mining GDP contribution[6]: 11% ● 3.8% population employed in mining as at 2022	● Prevalence Rate: 229 per 100,000 ● HIV-positive TB incidence rate: 105 per 100,000 ● 2022 TB treatment coverage: 44% ● Contributing Factors: ○ Poverty

Eswatini	● 2023 Population: 1.2 million
	● 2023 Life expectancy: 56 years
	● 2023 GDP Growth: 0.5%
		● Major Mining commodity: Coal
		● 2023 Mining GDP contribution[7]: 2 %
			● Prevalence Rate: 325 per 100,000
			● HIV-positive TB incidence rate: 187 per 100,000
			● 2022 TB treatment coverage: 61%
			● Contributing Factors:
			  ○ Poverty
			  ○ Unemployment

Madagascar	● 2023 Population: 30.3 million
	● 2023 Life expectancy: 65 years
	● 2023 GDP Growth: 3.8%
		● Major Mining commodities: Platinum, Chromium, and Gold[8]
		● 2023 Mining GDP contribution[9]: 4.2 %
			● Prevalence Rate: 233 per 100,000
			● HIV-positive TB incidence rate: 3.8 per 100,000
			● 2022 TB treatment coverage: 66%
			● Contributing Factors:
			  ○ Malnutrition
			  ○ Poverty

Malawi	● 2023 Population: 20.9 million
	● 2023 Life expectancy: 63 years
	● 2023 GDP Growth: 0.9%
		● Major Mining commodity: Uranium
		● 2022 Mining GDP contribution[10]: 1 %
			● Prevalence Rate: 125 per 100,000
			● HIV-positive TB incidence rate: 61 per 100,000
			● 2022 TB treatment coverage: 71%
			● Contributing Factors:
			  ○ Poverty
			  ○ Unemployment

Zimbabwe	● 2023 Population: 16.6 million	● Major Mining commodity: Platinum, chrome, gold, coal, lithium, diamonds	● Prevalence Rate: 204 per 100,000 ● HIV-positive TB incidence rate: 125 per 100,000

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[6] All Risk and No Reward. Right to Health Project

[7] https://www.afdb.org/en/countries/southern-africa/eswatini/eswatini-economic-outlook

[8] https://thediggings.com/

[9] African Development Bank Group (2023). Madagascar Economic Outlook. https://www.afdb.org/en/countries/southern-africa/madagascar/madagascar-economic-outlook

[10] International Trade Administration (2022). Mining and Minerals. https://www.trade.gov/country-commercial-guides/malawi-mining-and-minerals

	● 2023 Life expectancy: 59 years ● 2023 GDP Growth: 6.5%	● 2021 Mining GDP contribution[11]: 12 %	● 2022 TB treatment coverage: 55% ● Contributing Factors: ○ Malnutrition ○ Limited access to healthcare

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[11] Mining industry of Zimbabwe - Wikipedia. https://en.wikipedia.org/wiki/Mining_industry_of_Zimbabwe

3. TIMS CRG ASSESSMENT

3.1. Rationale.

Barriers related to human rights and gender issues have been identified by Citro et al. (2021) as barriers to access to tuberculosis (TB) and occupational health services[12], particularly among key populations (KPs) in the mining sector. The mining industry in Southern Africa heavily relies on migrant labourers, both from within countries and across borders, and is expanding due to the discovery of minerals. However, while regional policies and programs are in place, countries including Angola, Botswana, Eswatini, Malawi, Madagascar, and Zimbabwe have not fully adopted the policies to address TB and HIV among TIMS KPs and provide ongoing care and socioeconomic support for them and their families[13]. TIMS KPs are at a high risk of occupational lung diseases, particularly TB, due to exposure to silica dust, crowded living conditions, and HIV/TB co-infection. Silicosis, resulting from silica dust exposure, contributes to their susceptibility to TB infection even after leaving the mines. The region lacks sufficient occupational health services and skilled professionals to address these complex health needs, with smaller mining companies relying on the public health sector[14]. Ex-mine workers are entitled to compensation for occupational-related illnesses, but limited facilities can provide required screenings, denying them access to compensation. Accessible occupational health services, including TB screening, case finding, and compensation, are crucial for mine workers, ex-mine workers, and their families. Community-based service organisations can play a vital role in linking them to necessary support and services[15].

Access to health care, particularly TB care services, is significantly hampered by gender and human rights issues. However, no research has been done in the mining industry in Angola, Botswana, Eswatini, Malawi, Madagascar, and Zimbabwe to pinpoint these obstacles and the

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[12] Citro B, Soltan V, Malar J, Katlholo T, Smyth C, Sari AH, Klymenko O, Lunga M. Building the Evidence for a Rights-Based, People-Centered, Gender-Transformative Tuberculosis Response: An Analysis of the Stop TB Partnership Community, Rights, and Gender Tuberculosis Assessment. Health Hum Rights. 2021 Dec;23(2):253-267. PMID: 34966240; PMCID: PMC8694305.

[13] Smith J, Blom P. Those Who Don't Return: Improving Efforts to Address Tuberculosis Among Former Miners in Southern Africa. NEW SOLUTIONS: A Journal of Environmental and Occupational Health Policy. 2019;29(1):76-104. doi:10.1177/1048291119832082

[14] Ehrlich, R., Akugizibwe, P., Siegfried, N. et al. The association between silica exposure, silicosis and tuberculosis: a systematic review and meta-analysis. BMC Public Health 21, 953 (2021). https://doi.org/10.1186/s12889-021-10711-1

[15] https://www.timssa.co.za/Whoweare/AboutTIMS.aspx

TIMS key populations have not been identified and prioritised for evidence-based planning. In response, Angola, Botswana, Eswatini, Malawi, Madagascar, and Zimbabwe have endorsed the Southern African Development Community (SADC) Declaration on TB in the Mining Sector, demonstrating a shared commitment to eliminating TB by improving accountability, coordination and collaboration in disease control efforts. The SADC Declaration on TB in the Mining Sector includes commitments to detect and treat TB and related occupational lung diseases, and to ensure healthy working conditions for four key populations: miners, ex-miners, their families and communities. Therefore, to achieve its commitment, Angola, Botswana, Eswatini, Malawi, Madagascar, and Zimbabwe initiated a TIMS Communities Rights and Gender (CRG) assessment. This assessment aimed to find these obstacles and find solutions for them to expand access to TB services among miners, ex-miners and the communities living around mining areas and develop a costed action plan to remove the barriers.

3.2. Objectives of the TIMS CRG assessment

This TIMS CRG assessment aimed to pinpoint impediments connected to gender and human rights so that they can be dealt with and included in the national TB response. Furthermore, interactions with stakeholder groups, from this research, provided practical suggestions to remove these barriers. Additionally, the assessment included a country-level analysis of the legal, regulatory, and institutional framework that protects human rights, access, and institutional provisions against TB in the mining sector. The specific objectives of the assessment are to:

1. A contextual analysis to understand the structures, functionality, roles and responsibilities of men and women within mining communities.

2. A review of the policies, legal frameworks, and practices for TB in the mines, based on international, regional and sub-regional conventions, frameworks and guidelines.

3. Identification of all subgroups/categories of people that fall within KPs.

4. Collection and compilation of baseline data that is disaggregated by age, sex and other factors in order to identify issues/barriers to accessing TB services within the KP and examine the intersectionality with and impact on gender relations and roles.

5. Understanding of the perceived TB related stigma and its manifestations and how that impacts gender and human rights.

6. Development of recommendations to overcome the Human Rights, Gender and socio-economic related barriers for improving the TB response in the mines.

7. Development of costed country specific action plans from the recommendations made and use it as a roadmap for other project countries.

3.3. Methodology

Assessment Process

This assessment adopted a participatory and multisectoral approach to ensure comprehensive fact-finding. The main steps in the assessment process per each study country occurred over 12 months as shown in figure 2.
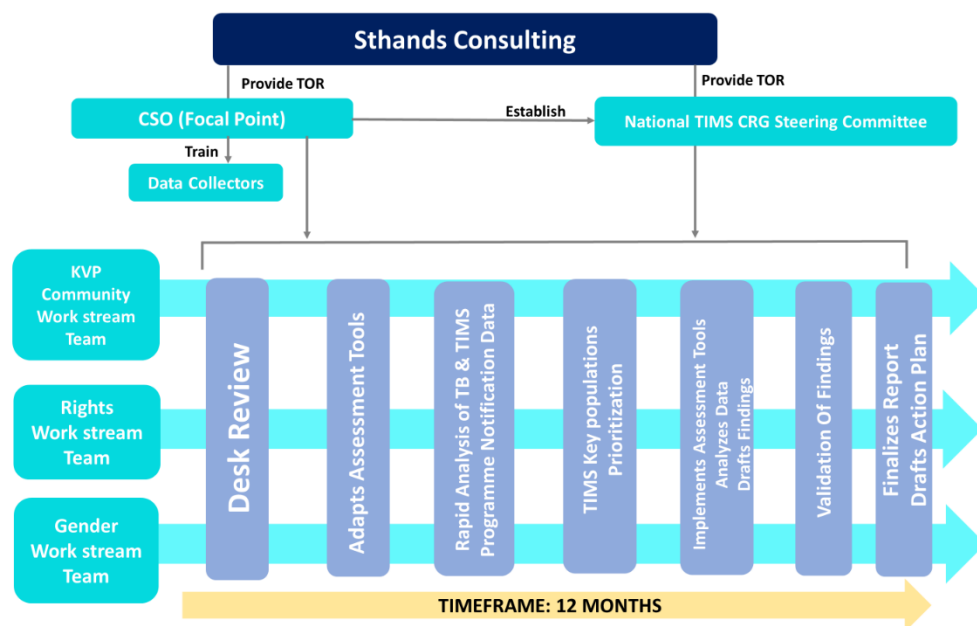
Figure 2: Assessment processes

Source: Sthands Consulting

Study Design

The assessment employed a cross-sectional study design involving a mixed method approach including desk review and collecting primary data through a structured questionnaire and interview guide with the aim of identifying the gender and human right barriers to TB services among KPs in the mining sector.

Study Populations

The assessment included:
- Men and women affected by TB in the mining sector, where people affected by TB in the mining sector refer to people ill with TB and their family members, communities, and healthcare workers who may be involved in caregiving or are otherwise affected by the illness.
- Representatives of community-based and civil society organisations engaged or interested to be engaged in CRG on TB services
- Healthcare providers and legal professionals involved in CRG and TB care.
- Stakeholders and experts on key populations, legal, and gender domains

Inclusion and Exclusion Criteria

Inclusion Criteria: The assessment included individuals infected or affected by TB, aged 18 years and older, and provided informed consent. These included individuals who had received at least 3 months of TB treatment or had previously been infected and completed TB treatment. Additionally, individuals who had an interest or worked in gender-related aspects, those who worked with Key Populations (KPs), and those involved in human rights and/or legal-environment-related aspects of TB response were included.

Exclusion Criteria: Individuals unable to provide answers due to illness or those KPs who were unwilling to provide consent were excluded from the study.

Study sites and Sample Size

The assessment used a stratified sampling approach to select representative districts in each six study countries, taking into account the TB disease burden and the types of Key Populations (KP) involved in mining activities. The sample size distributions are shown in Table 3. Subcategories of KPs were identified using both the assisted and unassisted approach of prioritisation with the Stop TB Partnership KP prioritisation matrix (see Annex 1).

Table 2: Sample Size Distribution

		Angola	Botswana	Eswatini	Malawi	Madagascar	Zimbabwe
Study Country							
Study Provinces/Districts		Huila, Luanda Norte, Luanda Sul, Cunene	Boteti, Goodhope, Greater Francistown, Greater Gaborone, Jwaneng, Kweneng East, Palapye, Selibe-Phikwe	Lubombo, Manzini, Shiselweni	Mangoch, Maching, Rumphi	Antsirabe II, Arivonimamo	Bubi, Hurugwe, Kwekwe, Mazowe, Sanyati, Shurugwi
Quantitative	HCW	34	36	10	30	33	87
	Current Miner	45	47	25	25	129	159
	Ex-Miner	42	36	65	32	35	140
	Total	121	119	100	152	197	386
Qualitative	Key Informant Interview	16	13	10	30	15	21
	Focus Group Discussion	4	13	3	2	3	9
	Facilitated Activity	1	1	1	1	1	1
	Total	21	27	14	33	19	31
Grand Total		142	146	114	182	216	417

Data Collection Processes

The assessment conducted a desk review to gather information on tuberculosis (TB) in key populations involved in mining activities in study countries. This included reviewing scientific publications, existing TIMs and CRG Assessment report, strategic documents, and guidelines related to TB in the mining sector such as African Comprehensive HIV/AIDS Partnerships (ACHAP)- a world bank supported study, Epidemiologic study on TB, HIV and Silicosis in Miners, Knowledge, Attitudes and Practices (KAP) on TB, HIV and Silicosis Among Key Populations, Review of existing Legislation and Regulations for mine health and safety in Southern African Development Community (SADC) countries, and Geospatial mapping of TIMS KPs. In addition, quarterly reports linked to TIMS from government agencies, the Chamber of Mines, Unions, Associations, studies from NGOs and donors, university research studies, media sources, and data and reports from the financial markets were reviewed.

Quantitative and qualitative primary data collection was also carried out using tools such as Kobo Collect and voice recorders during in-depth interviews (IDIs) and focus group discussions (FGDs). A facilitated workshop with relevant TIMS stakeholders was also held to validate findings and further strengthen some of the key issues and evidence generated from the assessment.
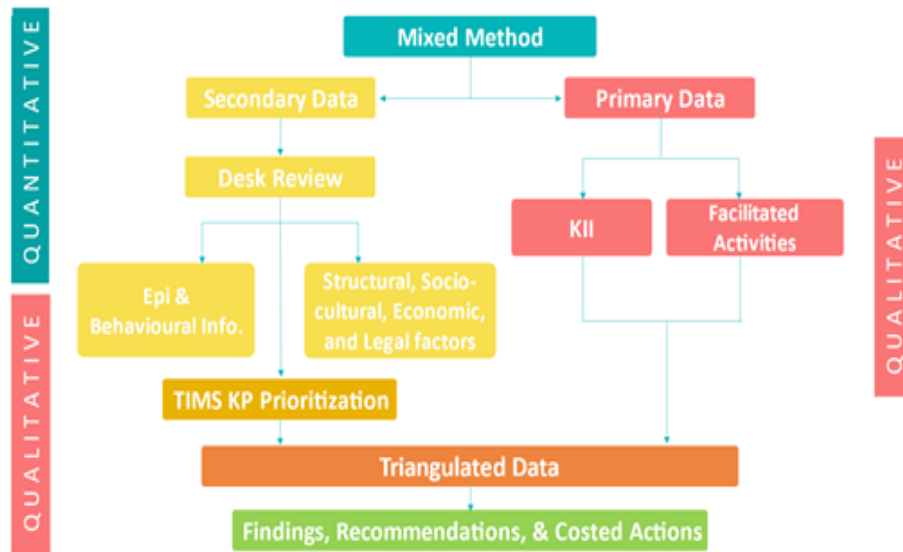
Figure 3: Data Collection Process

Source: *Sthands Consult*

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Data Management and Analysis

In this assessment, quantitative data management and analysis involved examining the distribution of tuberculosis (TB) burden among different demographic factors to generate strategic information using the CRG assessment framework. Primary and secondary data sources were analyzed using descriptive statistics, frequency tables, and graphical representations. Likert scale responses were coded, and proportional analysis was conducted. The analysis was performed using STATA version 17, and the results were interpreted within the research question's context. For qualitative data, transcripts were created, reviewed, and revised for accuracy. Atlas.ti software and Colaizzi's approach were used for qualitative data analysis, including coding, thematic categorization, and member checking. Measures were taken to ensure data security and backup. The findings provide insights for further research and interventions in TB management and control.
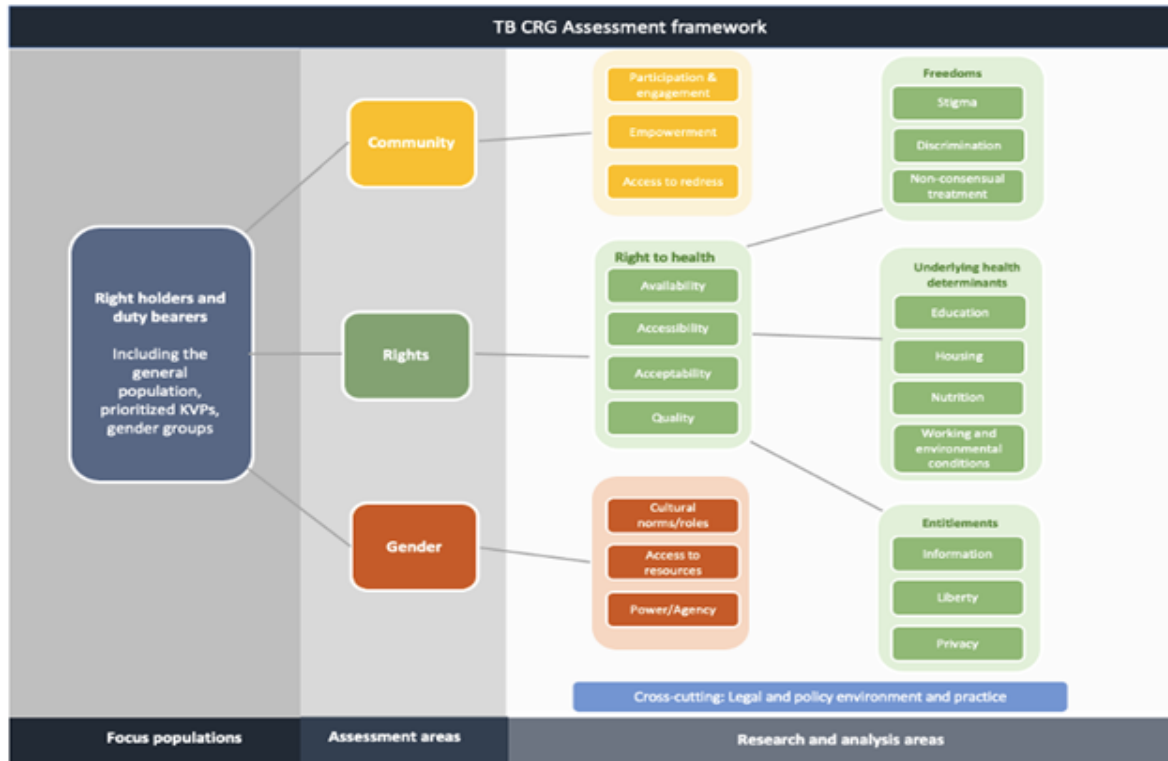
Figure 4: Generic CRG Assessment Framework

Source: *Stop TB Partnership*

Ethical consideration

The assessment followed ethical guidelines and obtained approval from the Health Research and Development Committee of each study country's Ministry of Health (see Table 3). Fair recruitment was ensured, and participants were fully informed and provided written consent, with measures in place to protect their privacy, confidentiality, and cultural sensitivity.

Table 3: Ethical Review Boards

Country	Ethical Review Board
Angola	National Commission of Ethics (NCE)
Botswana	Health Research Development Committee (HRDC)
Eswatini	Eswatini Health and Human Research Review Board (EHHRRB)
Madagascar	National Health Sciences Research Committee (NHSRC)
Malawi	National Health Sciences Research Committee (NHSRC)
Zimbabwe	Medical Research Council of Zimbabwe (MRCZ)

4. FINDINGS

4.1. TIMS Legal and Policy Environment

Across all six study countries—Angola, Botswana, Eswatini, Malawi, Madagascar, and Zimbabwe—some significant gaps in mine health and safety regulations and practices have been identified. They include:

Legislative Gaps

The legislative frameworks across the six study countries exhibit notable gaps and deficiencies, particularly concerning occupational health, safety standards, and enforcement mechanisms in the mining sector.

Table 4: Unratified Conventions[16]

Country	Unratified Conventions
Angola	o ILO Convention No. 155 (C155): Establishes a coherent national policy for occupational safety and health (OSH). o ILO Convention No. 159 (C159): Promotes vocational rehabilitation and employment for disabled persons. o ILO Convention No. 161 (C161): Provides a model for the organisation and functioning of occupational health services. o ILO Recommendation No. 171: Emphasises monitoring workers' exposure, provision of PPE, and workplace adaptation. o ILO Convention No. 187 (C187): A promotional framework for occupational safety and health improvement.
Botswana	o ICESCR convention o Convention on the Protection of the Rights of All Migrant Workers and Members of their Families ● Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa. Promotional ● Framework for Occupational Safety and Health Convention, 2006 (No. 187) ● ILO Convention No. 155 (C155): Establishes a coherent national policy for occupational safety and health (OSH).
Eswatini	o ILO Convention No. 155 (C155): Establishes a coherent national policy for occupational safety and health (OSH).
Madagascar	o ILO Convention 01 (1919): Overtime Pay o ILO Convention 158 (1982): Unfair dismissal
Malawi	● Occupational Safety and Health Convention, 1981 (No. 155)

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[16] https://normlex.ilo.org/dyn/normlex/en/f?p=1000:11001

Zimbabwe	○ ILO Convention No. 155 (C155): Establishes a coherent national policy for occupational safety and health (OSH).

Table 4 highlights these legislative gaps of unratified conventions per desk review and the assessment's facilitated activities. For instance, Angola has not ratified key conventions like No. 155 (national OSH policy), No. 161 (occupational health services), and No. 187 (OSH improvement framework). Botswana lacks ratification of conventions protecting the rights of migrant workers and women, such as the Convention on the Protection of the Rights of All Migrant Workers and Their Families and the Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa. Also, Eswatini has not ratified ILO Convention No. 155, which is essential for establishing a national OSH policy. Notably, Malawi has not ratified conventions specific to the mining sector, such as the Safety and Health in Mines Convention, 1995 (No. 176) and the Occupational Safety and Health Convention, 1981 (No. 155).

The assessment further revealed Eswatini and Zimbabwe's Mines and Minerals Acts require explicit inclusions on health and safety standards, while Zimbabwe also needs TB recognized as a compensable silica dust exposure-linked disease. Malawi and Madagascar lack comprehensive mining occupational health regulations and disease compensation frameworks. Similarly, Botswana's mining legislation is devoid of clear occupational health provisions or pathways for compensating mining-related occupational diseases.

The absence of permissible exposure limits for hazardous substances in Eswatini's legislation is another critical gap noted in this study. Insufficient Occupational Health and Safety standards result in exposure to unsafe working conditions, such as high silica and dust levels, leaving miners vulnerable to various occupational hazards without adequate protection or recourse in case of injury or illness as expressed during facilitated activities with stakeholders. Without clear inclusive compensation guidelines, injured or ill miners struggle to receive fair compensation. Weak enforcement mechanisms allow violations to persist.

Informal Mining Recognition

In countries such as Angola, Madagascar, Malawi, and Zimbabwe, a significant portion of mining activities occurs in the informal sector (refer to Table 5). Informal miners often

operate outside the legal framework, making it difficult to enforce occupational health and safety regulations and provide adequate healthcare services. An ex-miner shared this:

"The small-scale miners have no concrete laws that govern their operations so that they can be sensitive to the needs of the employees" - (EX_Miners_Sanyati_FGD- Zimbabwe)

The informal nature of these operations often means that artisanal miners work in hazardous conditions without proper safety equipment, training, or oversight, leading to higher rates of accidents and occupational diseases such as TB and silicosis. Furthermore, informal miners, especially those in remote areas, face challenges accessing healthcare and compensation as expressed in this study. In addition, limited infrastructure and financial barriers hinder timely TB screening, diagnosis, and treatment. In Botswana, the Workmen's Compensation Act does not cover National Artisanal Small Miners (ASM) activities like quarrying, sand extraction, and dusty operations, resulting in challenges for both local and returning miners from South Africa to access compensation. Likewise, despite a 2017 policy review in Zimbabwe, informal miners still lack legal recognition and compensation mechanisms. Stakeholder feedback at validation meetings across the six study countries further confirms existing concerns about compensating illegal miners and the absence of tailored regulations for small-scale miners.

Cross-border Challenges

Another shared gap, noted in this study, was the inadequate cross-border legal frameworks and support systems for miners working across borders. Miners working across borders face unique challenges, including inadequate legal frameworks for compensation and healthcare, as well as difficulties in accessing support systems in their home countries. Existing policy frameworks do not adequately address their needs or provide seamless continuity of care across national borders due to differing regulations.

Policy Implementation Gap

There is a notable gap between policy design and implementation in all six countries. While policies may exist on paper, their effective enforcement and execution are often hindered by inadequate funding, resources, and commitment from relevant stakeholders, resulting in limited impact on the ground. Angola lacks adequate resources and capacity for enforcing regulations. Botswana struggles to translate legislative provisions into practical enforcement due to resource constraints and limited regulatory oversight. Eswatini experiences a lack of implementation of stipulated occupational health and safety standards, exacerbated by

limited monitoring and enforcement mechanisms. Malawi and Madagascar grapple with insufficient regulatory capacity, resources, and mechanisms to effectively monitor and enforce compliance. Zimbabwe faces significant policy-implementation gaps characterized by weak execution and inadequate funding for enforcement mechanisms.

Additionally, existing support programs are short-lived and unsustainable, failing to address the needs of all miners, including those in informal sectors. Many of the current initiatives providing packages and other forms of support to miners are driven by time-bound projects or donor funding. This lack of long-term, sustainable financing, and programmatic models renders these efforts unable to create lasting impacts.

Moreover, most existing programs primarily cater to miners employed full-time in formal, large-scale mining operations and persons with drug-resistant TB. However, a significant proportion of contract miners, particularly in artisanal and small-scale mining, who operate in informal sectors are mostly exempted. The limited scope and short-term nature of current programs lead to service delivery gaps, leaving many miners, especially those operating informally, vulnerable to occupational hazards like tuberculosis without adequate prevention, diagnosis, or treatment measures in place.

4.2. TIMS Community

Priority Key Populations for TB in the Mining Sector

The assessment identified current miners, ex-miners, their family members and community members as the key populations during preliminary engagement across Angola, Botswana, Eswatini, Malawi, Madagascar and Zimbabwe for targeted tuberculosis infection prevention and control strategies within the mining sector.

Among the current miners and ex-miner, sub-categories were identified during the quantitative assessment of this study (see Table 5). For current miners, the major sub-groups included persons living with HIV, smokers, migrants, individuals with alcohol dependency and women in mining. Ex-miners primarily identified themselves as elderly, persons living with HIV, persons with silicosis, smokers, persons with disabilities, individuals with alcohol dependency and the rural poor.

Table 5: Ranked Sub Key Populations

Country	EX-Miner	Current Miner

Angola	Mining Community Member, Artisanal and small-scale miners, Miners and Ex-miners with disabilities	Artisanal and small-scale miners, Miners and Ex-miners with disabilities, Women in Mining, Mining Community Member, Miner/Ex-miner family member,
Botswana	Elderly, Mining Community Member, Smokers, Rural poor, PLHIV, People with silicosis, Alcohol Dependent	Mining Community Member, Smokers, Women in Mining, PLHIV, Alcohol Dependent
Eswatini	Miners and Ex-miners with disabilities, Elderly, People with silicosis, PLHIV, Mining Community Member, Pregnant Woman, Women in Mining, Alcohol Dependent, Smokers	Miners and Ex-miners with disabilities, Alcohol Dependent, Women in Mining
Madagascar	Elderly, Artisanal and small-scale miners, Miner/Ex-miner family member, Mining Community Member, Migrant, Smoker, People with silicosis	Artisanal and small-scale miners, Miner/Ex-miner family member, Mining Community Member, Migrants, Women in Mining, Alcohol Dependent
Malawi	Women in Mining, Mining Community Member, Miner/Ex-miner family member, Artisanal and small-scale miners, PLHIV, Alcohol Dependent, Smokers, People with silicosis	Mining Community Member, Miner/Ex-miner family member, Artisanal and small-scale miners, Women in Mining, Smoker, PLHIV, Alcohol Dependent,
Zimbabwe	Artisanal and small-scale, Elder, Smoker, Miner/Ex-miner family member, Women in Mining, Migrant	Artisanal and small-scale miners, Smoker, Miner/Ex-miner family member, Mining Community Member, Women in Mining, Alcohol Dependent, PLHIV

Ex-miners are found high-risk for TB, in this study (see Figure 5), with recurrently higher proportions having TB or having had TB in the past. Although current miners recorded lesser proportions, they are still regarded as a key population due to evidence suggesting a strong link between TB and silicosis[17], a lung condition caused by prolonged exposure to silica dust in mining environments.

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[17] Ehrlich, R., Akugizibwe, P., Siegfried, N. et al. The association between silica exposure, silicosis and tuberculosis: a systematic review and meta-analysis. BMC Public Health 21, 953 (2021). https://doi.org/10.1186/s12889-021-10711-1

Yes I Have ever been diagnosed of TB
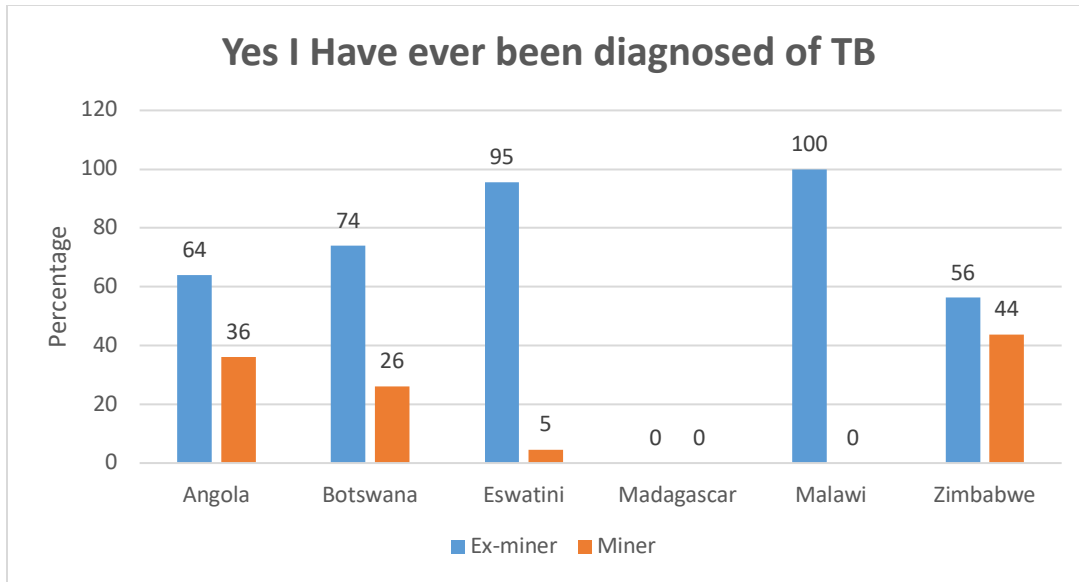
Figure 5: Diagnosis of TB among Miners and Ex-miners

This indicates that silica dust accumulated during their mining work may lead to TB symptoms later, even after they have ceased working in the mines.

Community Dynamics and TB Impact

The assessment data revealed distinct demographic and health profiles for current miners versus ex-miners across Angola, Botswana, Eswatini, Malawi, Madagascar and Zimbabwe.

Current Miners

Demographics
The current mining workforce that participated in the study had an average age of 37 years with a close inter-quartile range of 36-38 years across the six study countries. Angola, Eswatini, and Zimbabwe show a higher proportion of male participants, whereas Malawi shows a more balanced distribution, though still with more males (63%) than females (38%). Across all the study countries, males constitute 73% of the total current miners, while females make up 27%.

Level of Education
In terms of educational attainment as illustrated in Figure 6, most current miners (37%) possessed a secondary education level especially in Eswatini (50%) and Zimbabwe (46%), with Madagascar having the least at 23%, middle school or junior high school education is held by 15% of miners, with the highest percentages in Botswana (32%) and Zimbabwe (23%),

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while Madagascar has only 2% and Malawi has none. Five percent (5 %) have no education, with the highest in Madagascar (11%) and the lowest in Zimbabwe (1%). Primary education is prevalent among 32%, notably in Madagascar (64%) and Malawi (54%), with none in Botswana. Senior secondary education is the most common at 37%, especially in Eswatini (50%) and Zimbabwe (46%), with Madagascar having the least at 23%. Tertiary education is achieved by 12%, highest in Botswana (36%) and Angola (31%), with no representation in Madagascar. The educational levels of current miners tend to be higher compared to ex-miners.

Level of Education Among Current Miners
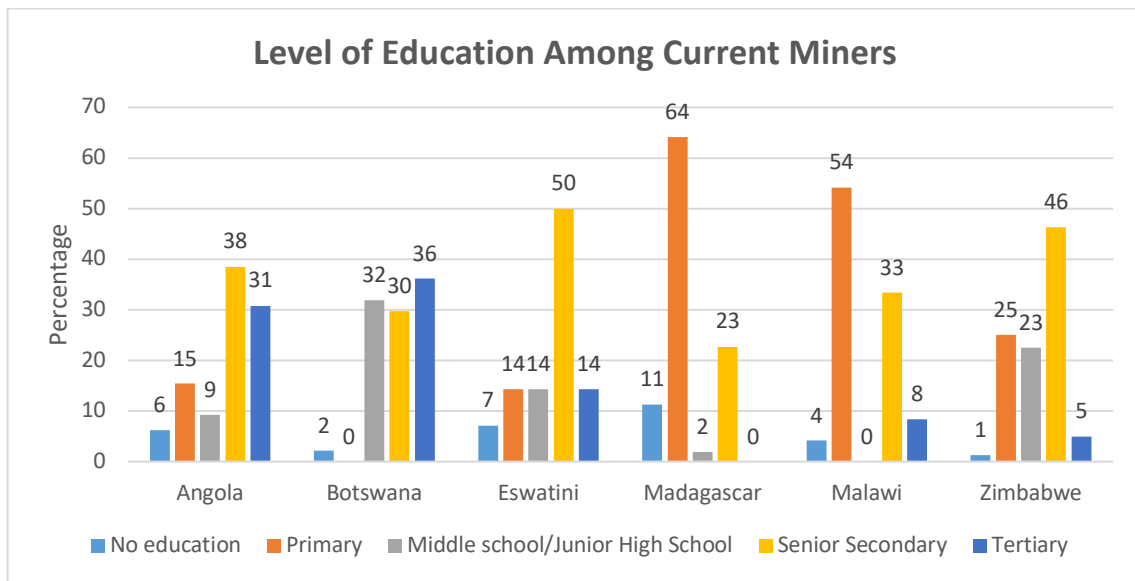
Figure 6: Level of Education among Current Miners

Self Reported Health

The assessment of physical health status among current miners, illustrated in Figure 7 showed that 71% rated their health as good, with the highest percentages in Zimbabwe (76%) and Botswana (74%), and the lowest in Angola and Malawi (both 67%). Furthermore, 27% considered their health moderate, with the highest in Angola and Malawi (both 33%) and the lowest in Zimbabwe (23%). Only one (1%) percent of miners rated their health as poor, with small representations in Angola (5%) and Botswana (3%), and none in Eswatini, Madagascar, or Malawi.

This younger age range combined with relatively better self-reported health and higher educational levels among active miners may impact their health practices, literacy levels, and

ability to access and comprehend TB information. However, their occupational exposure to dust and silica puts them at risk for lung diseases like silicosis and TB in the future[18].
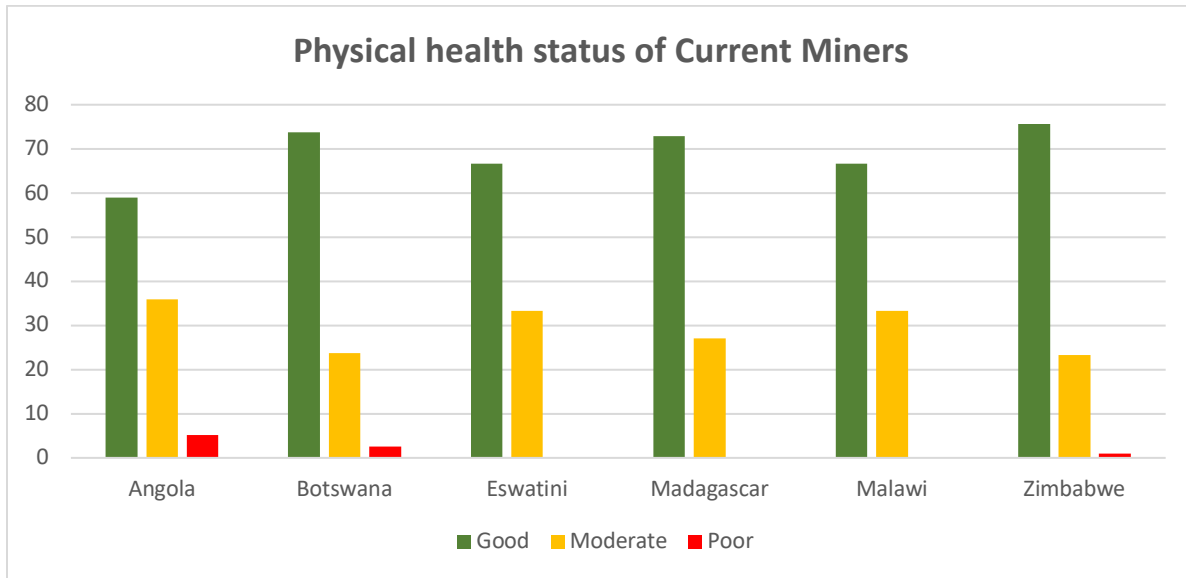
Figure 7: Physical Health Status of Current Miners

Ex-Miners

Demographics

In contrast, ex-miners who participated in the study had a higher average age of 52 years, ranging 40-63 years old for first and third quantile respectively. Overall, males represent 84% of the ex-miner population, while females account for 16%. Angola (89%), Eswatini (90%), Madagascar (60%), and Zimbabwe (91%) also have a substantial majority of male ex-miners, with Madagascar showing the highest proportion of female ex-miners (40%) among these countries.

Level of Education

Most had primary education with the remaining having higher educational levels of middle school or secondary schooling (Figure 8). Overall, 39% have primary education, notably high in Madagascar (89%) and Malawi (50%). Similarly, 19% have a middle school or junior high school education, with the highest in Zimbabwe (28%) and none in Madagascar and Malawi. Again, 26% have senior secondary education, with the highest in Zimbabwe (38%) and none

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[18] All Risk and No Reward. Right to Health Project

in Botswana. Only 2% have tertiary education, with small representations in Botswana (6%), Malawi (6%), and Zimbabwe (2%).
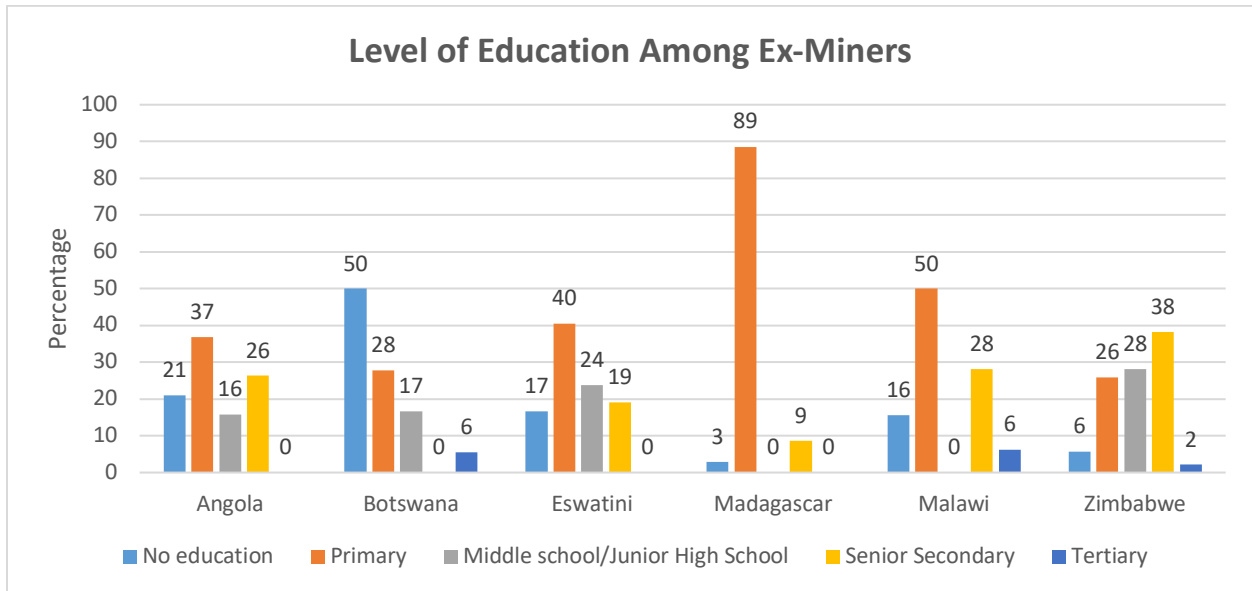
Figure 8:Level of Education among Ex-miners

Self Reported Health

The assessment of physical health status among ex-miners, as showed in Figure 9, revealed that 54% rated their health as good, with the highest in Malawi (76%) and Madagascar (67%), while none in Angola report good health. In addition, 33% considered their health moderate, with the highest in Eswatini (67%) and Botswana (41%), and the lowest in Malawi (20%). Also, 13% rated their health as poor, with the highest in Angola (67%) and Eswatini (27%), and the lowest in Malawi (4%) and Zimbabwe (8%). An ex-miner had this to say:

> *Working in the mine took a huge toll on their health, in particular their[ex-miner] lungs, they worked in a dusty environment and that dust contains silica dust that causes silicosis that leads to permanent damage of their lungs. By virtue of the status of their lungs and their living conditions, they are most vulnerable to TB*
> *- FGD, Ex-mine workers, Sigangeni, Eswatini*

The older ages, lower educational attainment, and poorer self-reported health status among ex-miners suggests this population faces greater vulnerabilities. They may have reduced health literacy, complicating their ability to recognize TB symptoms, access care, and adhere

to treatments. Their historically high occupational exposure to silica dust also increases their susceptibility to TB reactivation[19].

Physical health status of Ex- Miners
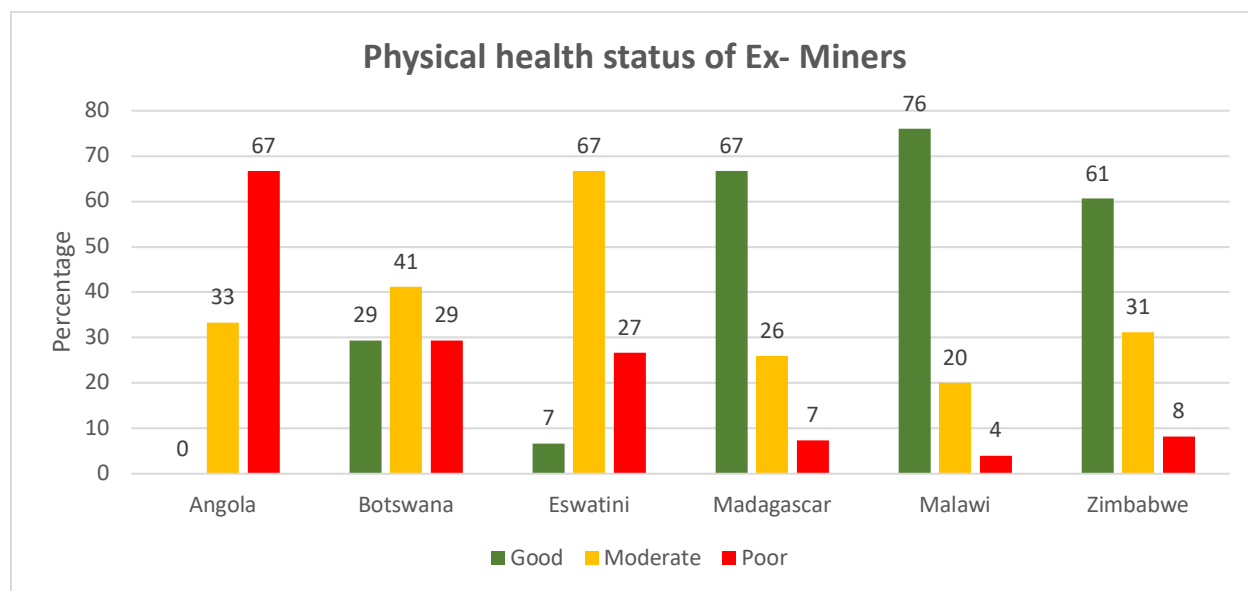
Figure 9: Physical health status of Ex-Miners

TIMS Community Participation and Engagement in the TB Response

The 2018 and 2023 United Nations Political Declaration on Tuberculosis (UN HLM on TB) [20] underscored the vital role of communities in advocating for and participating in the coordination and delivery of TB response services across SADC countries including Angola, Botswana, Eswatini, Malawi, Madagascar and Zimbabwe. Member states acknowledged the necessity of scaling up community responses to TB to achieve the UN HLM on TB targets, with a commitment to ensuring that some of these efforts are community-led by 2030. The Global Plan to End TB[21] also emphasises the importance of supporting TB survivors and key and vulnerable populations as essential partners in TB research and development in these countries. During the validation meetings, stakeholders across the study countries disclosed ongoing strategic efforts, though at different levels, to further engage the KPs and as well

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[19] All Risk and No Reward. Right to Health Project

[20] WHO (2023) . *Political declaration of the high-level meeting of the General Assembly on the fight against tuberculosi*s . Retrived from https://stoptb.org/webadmin/cms/docs/Political-Declaraion-on-the-Fight-against-Tuberculosis.pdf

[21] Stop TB partnership (2023) *The Global Plan to End TB 2023-2028*. Retrieved from https://www.stoptb.org/advocate-to-endtb/global-plan-to-end-tb

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develop a guideline of engagement to bolster public health interventions within mining communities and beyond.

Focus group discussions and key informant interviews across the six countries revealed inadequate coordination between key populations, civil society organisations (CSOs) and community-based organisations (CBOs) working in public health and TB at the mining community level. A stakeholder from Zimbabwe had this to say:

"...our engagement with private entities and public entities is not effective"
- KII, CSO, Harare , Zimbabwe

As a result, the implementation of community-based TB interventions is currently limited as reported in Zimbabwe. Community engagement is reported ineffective due to widespread misconceptions and misplaced beliefs about TB in the communities. Here is some myth expressed during the qualitative assessment.

"There is a myth is you drink milk after inhaling dust you will be cleansed."
– KII, CSO, Harare , Zimbabwe

Stakeholder facilitated activity further highlighted that low levels of accurate knowledge, attitudes, beliefs, and practices regarding the TB epidemic were the main factors inhibiting community participation and engagement in TB control efforts. Language barriers were also reported as a peculiar obstacle to the engagement of informal miners in Botswana.

The capacity of women in mining associations is limited, requiring additional support to actively participate in health advocacy and safety initiatives. These women's associations across the study countries and the Widows forum in Botswana faced challenges as they were non-functional due to a lack of resources and informal status limiting their ability to gain recognition from key stakeholders.

Stakeholders also noted that a national TB platform driven by the community would serve as a pivotal complement to the government-led Multi-Sectoral Accountability Framework, embodying its principles and facilitating a cohesive national strategy to effectively address and eradicate TB within the mining sector across Angola, Botswana, Eswatini, Malawi, Madagascar and Zimbabwe and beyond.

4.3. The Right to Health

Availability

Angola, Madagascar and Zimbabwe face severe resource constraints that hamper TB service availability - including inadequate funding, limited healthcare infrastructure and workforce shortages. Frequent stockouts of essential TB medicines due to supply chain issues delay treatment initiation and adherence in these countries. The scarcity of healthcare facilities with proper equipment and diagnostic capabilities, especially in remote mining areas, severely restricts access to comprehensive TB care. Participants had this to say

> *"The hospital doesn't have medicine; they say they have to buy it."*
> *– IDI, Mining Community Member, Angola*

Botswana experiences some service gaps despite relatively better infrastructure, notably in informal mining communities. Occasional drug and diagnostic supply stockouts increase risks of treatment disruption and drug resistance. A shortage of healthcare workers trained in TB care also impacts service quality and availability. Eswatini grapples with a dire shortage of healthcare facilities equipped to manage TB, particularly in remote mining regions. Chronic underfunding hampers procurement of TB drugs and diagnostics, leading to frequent shortages. This is compounded by a lack of adequately trained providers. While Malawi has policies guaranteeing free TB treatment, significant service availability gaps arise from logistical and resource constraints. Infrastructure deficits in rural mining areas limit comprehensive TB services. Mobile clinics enhance outreach but are hampered by operational challenges like insufficient fuel funding.

Accessibility

Angola, Malawi, and Madagascar face significant geographical barriers, with many mining areas located in remote and isolated regions with poor road infrastructure. This makes it extremely difficult for miners to access TB healthcare facilities. Compounding this, the high cost of transportation further limits access, especially for low-income miners and their families. An ex-miner had this to say:

> *"Sometimes you have to travel long distance to get treatment for a condition which the government facility cannot provide and in some cases in this rural area transport is an issue... also I cannot pay the private hospitals" - IDI, Ex-miner, Botswana*

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While mobile clinics exist, they are often underfunded and lack logistical support to reach distant mining communities regularly as expressed by stakeholders during facilitated activities. At some point in the TB care, patient have bared some catastrophic cost and this what ex-miner expressed his concern:

"Yes, we have challenges, we do not have funds to go for X-ray and all the medical procedures require money so if you do not have money you will die because you will not get assistance" - Ex_Miners, Shurugwi_FGD, Zimbabwe

In Botswana and Zimbabwe, the long distances miners must travel to reach the nearest TB facility pose a major barrier, particularly for those in remote mining areas. The cost and availability of transport are huge issues, with many unable to afford regular travel. Furthermore, informal miners like migrants frequently avoid seeking care due to fears of legal repercussions, discrimination, or arrest. Eswatini's mining communities are frequently situated in remote locations with limited healthcare access. The high cost of travel to facilities is a significant deterrent affecting miners' ability to seek timely TB care. Limited community outreach programs also reduce awareness and service accessibility in isolated mining regions. While policies in Malawi guarantee free TB treatment, issues like geographical isolation of mining areas and high transport costs still prevent many miners from accessing diagnosis and treatment services. Although mobile clinics provide some outreach, funding and logistical challenges restrict their reach, leaving many remote mining zones underserved.

Acceptability

Acceptability of TB challenges in Angola, Botswana, and Zimbabwe stems from high levels of stigma and discrimination against TB, often linked to misconceptions around its association with HIV/AIDS. One misconception expressed was:

"Once you say you have TB they say you are HIV positive and so people hide TB treatment" – KII, CSO , Zimbabwe

This leads to fear of social ostracism, preventing miners from disclosing their status and seeking timely diagnosis and treatment. Cultural beliefs and traditional practices also conflict with modern TB protocols, reducing service acceptability. Concerns around privacy, confidentiality breaches, and negative healthcare worker attitudes further deter miners from utilizing services.

In Eswatini and Malawi, the social stigma attached to TB exacerbates isolation and delays in care-seeking. Lack of community support and understanding perpetuate these stigmatizing attitudes. Reports of discriminatory practices and insufficient training of healthcare workers in sensitive, confidential case management impact miners' willingness to access services. Persisting cultural misunderstandings about transmission fuel fear and avoidance of TB patients. While Madagascar contends with entrenched socio-cultural stigma, low awareness levels about TB's treatability breed misconceptions and fear that undermine service acceptability. Negative patient experiences, including perceived judgmental healthcare provider attitudes, reduce the acceptability and utilization of TB services in mining communities.

Quality

Angola, Botswana, and Madagascar face quality of care challenges stemming from resource constraints like limited funding, inadequate healthcare infrastructure, shortages of essential medicines and diagnostics, as well as poor laboratory and diagnostic capabilities. This severely compromises TB service delivery quality across the continuum from screening to treatment and follow-up care. A critical factor is insufficient specialised training opportunities for healthcare workers in standardised TB case management protocols.

In Eswatini and Malawi, the quality of TB services varies significantly between regions, with rural mining areas often receiving suboptimal care compared to urban centres. Lack of continuous professional development and capacity-building for providers impacts their effectiveness. Follow-up systems are weak, leading to poor treatment adherence, higher failure rates, and drug resistance risks. Inadequate treatment supporters available for key populations further heightens the challenge of quality TB services (see figure 10).
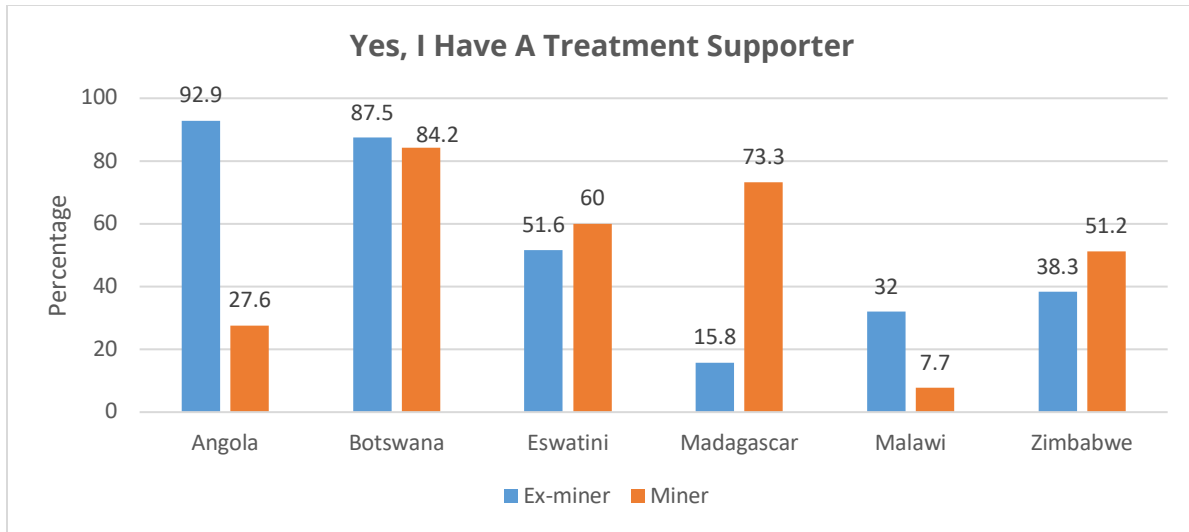
Figure 10:Treatment Supporters across KPs

Frequent disruptions to TB medicine supply chains in Malawi cause treatment interruptions. Zimbabwe and Malawi data highlight a concerning gap in terms of treatment supporter services to facilitate adherence. For Zimbabwe, high miner mobility and lack of cross-border treatment continuity protocols disrupt care.

Stigma and Discrimination

Across the region of Malawi, the stigma against multidrug-resistant TB (MDR-TB) patients was perceived severe in this study, with blame and harsher discrimination due to more pronounced and persistent signs and symptoms and the longer duration of the disease. In Madagascar, misconceptions that TB is highly contagious and fatal perpetuate ostracization. Women with TB face compounded gender-based stigma limiting their access to care and support.

Angola, Eswatini, and Zimbabwe grapple with entrenched community stigma, social isolation, and cultural misconceptions that TB results from personal failings or punishment. This deters patients from seeking timely diagnosis and treatment. Internalized self-stigma, fuelled by feelings of shame and guilt, further reduces care-seeking willingness and adherence. Privacy and confidentiality concerns in healthcare settings also discourage patients in these countries from accessing TB services. In Botswana and Malawi, the high TB-HIV coinfection rates intensify stigma, with TB carrying associations of HIV, prompting fear and avoidance behaviours. This assessment further revealed that stigma in the community (19.8%) and at work (18.9%), averagely, were the most significant barriers to accessing healthcare for TB patients across Angola, Botswana, Eswatini, Madagascar, Malawi, and

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Zimbabwe, with Angola also experiencing high levels of stigma at home (33.3%) and in health facilities (37.5%) as shown in Figure 11.

Percentage of Stigma Experiences Inhibiting Access to Healthcare Across Study Countries
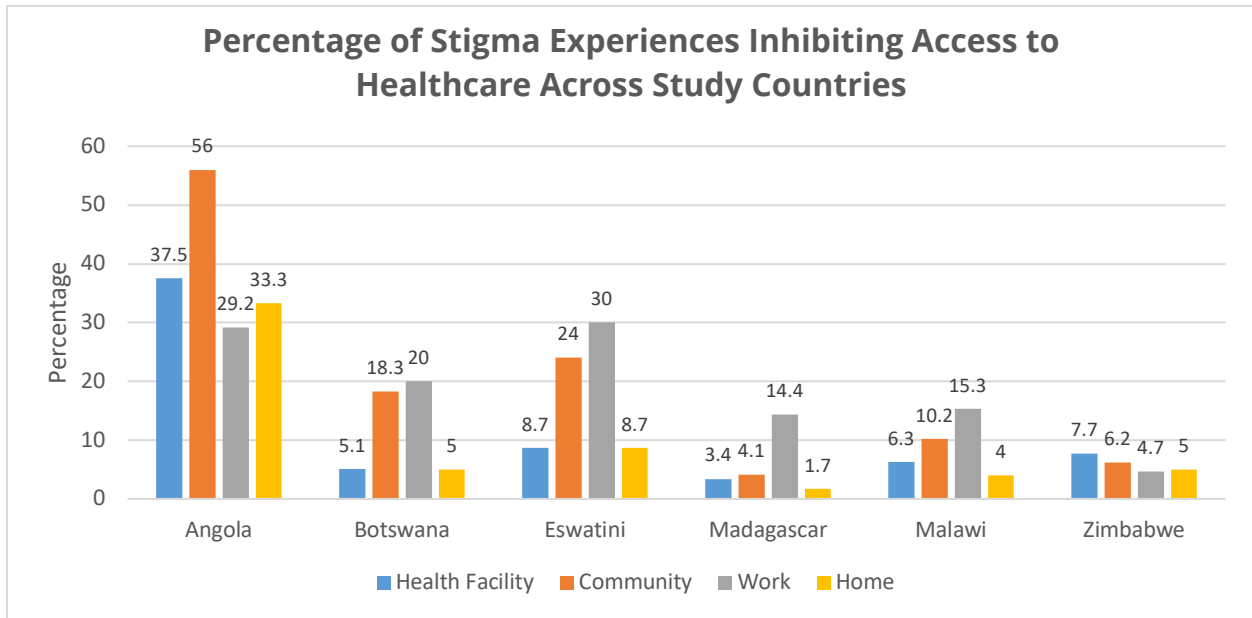
Figure 11: Stigma Experiences Inhibiting Access to Healthcare Across Study Countries

Entitlement

Knowledge of Rights Gaps

The assessment of miners' and ex-miners' awareness of their entitled rights revealed significant gaps across the study countries. While 70% of miners in Eswatini acknowledged sick leave rights and the right to seek medical evaluation, other critical rights had lower awareness rates, such as the right to withdraw from the mine due to inadequate safety training, refuse to work in unhealthy conditions, and file complaints about safety violations. In Angola, 20% were unaware of their right to receive a medical evaluation, 62% didn't know they could submit a complaint about safety violations, 56% were unaware of their right to leave the mine if safety training was not provided, 50% didn't know they could refuse to work in unsafe conditions, 45% were unaware of their right to adequate working conditions, and 33% didn't know about their entitlement to sick leave. Similarly, in Zimbabwe, 27% didn't know they could file a safety complaint, 35% were unaware of their right to withdraw from unsafe work, 29% lacked knowledge about their right to appropriate working conditions, and 17% were uninformed about their paid sick leave entitlement.

Poor Working Conditions and Occupational Hazards

Miners in these six study countries grapple with precarious working environments and occupational hazards like dust exposure, use of dynamite, and inadequate protective equipment - issues particularly acute in informal mining operations. A participants had this to say:

> *The working conditions were poor. The safety training was done with particular focus on how to protect yourself from inhaling mine dust and from there you are not given proper PPE that you were shown during the safety training. Upon starting work you are only given safety boots and a helmet, and you cannot work like that because you are going to suffocate due to poor ventilation and no safety masks." -FGD, Boswelakoko, Botswana*

Non-compliance with safety protocols, overcrowding, and poor ventilation heighten TB transmission risks.

Child Labour Prevalence

The issue of child labour in mining communities is a major concern in certain countries like Angola, Madagascar, and Zimbabwe. Its prevalence exacerbates entitlement challenges, with child miners facing infringement of their rights and being subjected to hazardous working conditions from a young age. In addition to the direct health risks, child labour in mining often leads to reduced access to education and perpetuates cycles of poverty and vulnerability as expressed by some stakeholder during facilitated activities of this study.

Compensation

The assessment revealed that in Angola, despite policies mandating compensation for occupational diseases, implementation gaps persist. Miners lack awareness of their rights, and bureaucratic processes discourage claims. Informal mining operations exacerbate the issue due to its illegality. Likewise in Botswana, Eswatini, Madagascar, Malawi, and Zimbabwe, delays in processing claims and inadequate funds hinder miners' access to full medical coverage and income replacement. Informal miners are particularly disadvantaged, as they often operate outside the formal compensation schemes.

> *When you seek services from TEBA office about your benefits, they tell you that your name is not on the list of people who are to be compensated and you wonder how your name is not on the list even though you worked in the mines and I was paying tax. After sometime*

your records are said to have disappeared, we are living with ailments that were a result of working in the mines and there is no assistance that we have received so far.

- *FGD, Ex-miners, Botswana*

4.4. GENDER

Cultural Roles and Norms

Angola, Botswana, Eswatini, and Zimbabwe exhibit similar gender dynamics where societal norms and expectations discourage men from seeking timely TB diagnosis and care. Cultural attitudes equate illness with weakness, undermining masculine identities. Men prioritize income generation over health needs, delaying care access. The health facility environments, perceived as unwelcoming to men, further deter them. A stakeholder had this to say:

> *"Men always avoid long queues in hospitals and are impatient to wait for medical assistance from morning until midday still without service. Meanwhile, they need to be at work and they will be expected to provide dinner for their families." - Gender M&E Analyst, Mbabane, Eswatini*

Across the study countries, women were identified as more proactive in utilizing health services, influenced by habits like prenatal care. However, their caregiving roles for ill family members, including TB patients, increase their risk exposure and burden. Limited decision-making power restricts their ability to prioritize personal health needs. A participant had this to express:

> *"Well mostly I would say men try to hide their symptoms and avoid medicals as compared to women. Maybe we can argue to say men are shy of going to seek medical help but women readily seek it if need arises. Men are ignorant to their medical condition, men don't want to go to the clinic, and women are open enough to seek medical help. Men are very much reserved with how they feel even medically" - Ex-miner, Hurungwe - KII, Zimbabwe*

In Malawi, gender disparities manifest intensely. Women bear arduous caregiving burdens for men with TB while managing other responsibilities, amplifying their TB exposure risks. Adolescent girls and young women in mining areas face overlapping vulnerabilities including TB, HIV, and gender-based violence. Formal mining remains male-dominated, while women are overrepresented in informal artisanal/small-scale operations with distinct occupational hazards. Madagascar reflects similar gender inequalities - men delaying diagnosis due to breadwinner pressures and resorting to ineffective traditional medicines. Women pursue early diagnosis but face risks from caregiving roles amidst persisting traditional gender

norms. Zimbabwe data highlights the compounded challenges for transgender individuals facing societal stigma and legal barriers limiting their healthcare access.

Access to Resources

Angola and Botswana exhibit similar gender disparities where limited educational and economic opportunities for women restrict their access to resources and autonomy in health decision-making, including seeking TB services. Reliance on male partners or family for financial support further impedes women's ability to independently access care.

In Eswatini, Madagascar, and Zimbabwe, transportation and financial barriers loom large. The costs of reaching health facilities and economic constraints severely limit women's access to TB screening and treatment services (see figure 12). Reliance on male partners for resources compounds these challenges.
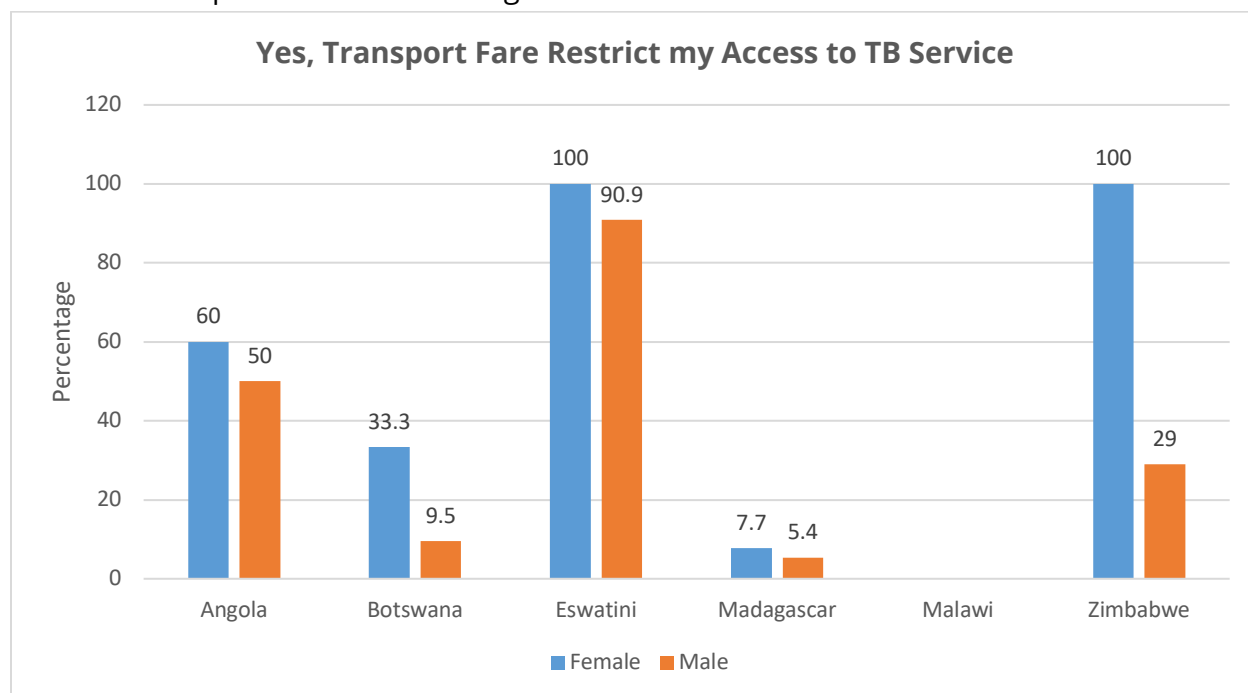
Figure 12: Transport restriction to TB services

Across Malawi and Zimbabwe, lower education levels among women in mining communities translate to fewer employment prospects and financial independence. This economic disempowerment, coupled with issues like transportation costs, significantly restricts healthcare access, including for TB.

A common thread is the vicious cycle where gender disparities in education and employment lead to financial dependence on male partners. This economic disempowerment,

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compounded by logistical barriers like costs and transportation issues, undermines women's autonomy and ability to prioritize their health needs, including accessing timely TB services.

5. RECOMMENDATIONS

5.1. Intervention Area 1: Strengthening the TIMS Policy and Regulatory Framework

5.1.1. Policy Integration and Harmonization:

Responsible Agency: Ministries of Health, Labor, Mining

- Integrate national TIMS advocacy plans, health and safety plans, and community rights and gender plans into a cohesive, costed action plan in Angola.
- Harmonize TB policies, occupational health and safety policies, public health acts, and mining codes to be rights-based and gender-sensitive in Eswatini.
- Finalize and disseminate the occupational health and safety policy by the end of 2024, ensuring comprehensive policy coverage in Botswana.
- Ensure widespread dissemination and adoption of integrated action plans through strategic communication campaigns across the region.

5.1.2. Legal and Regulatory Reforms:

Responsible Agency: Ministries of Health, Labor, Mining, Parliaments

- Advocate for the inclusion of TB and silicosis in occupational health and safety laws, recognizing them as compensable occupational diseases in Angola.
- Finalise and disseminate employment protection legislation recognizing TB as an occupational disease among miners in Malawi.
- Amend laws to regulate and ensure the best health and fair compensation benefits for migrants, informal and contractual miners, and ex-miners across the region.
- Revise and update decrees related to Angola's Agentes de Desenvolvimento Comunitário e Sanitário (ADECOS), Acts, and regulations to align with current needs. Include provisions for exit medical examinations for ex-miners in Eswatini, regular occupational medical screenings, and protection for child and women employment in Angola.

5.1.3 Policy Advocacy and Ratification:

Responsible Agency: Ministries of Labor, Mining, Miners' Unions, CSOs

- Advocate for the ratification of key international labour and safety conventions (ILO Conventions C103, C183 for Madagascar and ILO Conventions C155, and C187 for Eswatini).
- CSOs should advocate for amendments to the Occupational Safety and Health (OSH) Act to align with international standards in Eswatini.

5.1.4. Capacity Building and Stakeholder Engagement:

Responsible Agency: Ministries of Health, Labor, Mining, Parliaments

- Enhance the resources and legal capacities of regulatory bodies to enforce safety standards, especially in foreign-managed operations across the region especially in Zimbabwe.
- Update training packages and provide regular culturally relevant training sessions for community health workers, miners, and relevant stakeholders across the region.
- Draw policy to train local personnel in geospatial data management and promote mining health research through academic collaborations across the region.
- Expand the Tripartite Advisory Committee and other platforms to include civil society organisations (CSOs) and mining communities in Eswatini.
- Collaborate with external partners to enhance decision-makers' understanding of community-led responses.
- Draw policy to simplify and disseminate reformed mining codes and policies among mining communities across the region.

5.1.5. Community and Economic Support:

Responsible Agency: Ministries of Health, Labor, Mining, Social Development, CSOs

- Formulate guidelines for social protection programs and economic empowerment initiatives for ex-miners, miners, and their families across the region.
- Develop guidelines for social contracting to recognize and fund community-led responses across the region.
- Revise recruitment guidelines to include key populations affected by TB as community health workers across the region.
- Improve funding policies to support CSOs to scale up screening models targeting key populations across the region.
- Decentralize TIMS compensation offices for better access by setting up sub-offices, robust referral mechanism connecting compensation offices/focal points with TEBA, recruiting staff, appointing focal points, developing compensation tools, and conducting training across the region especially in Botswana.
- Engage the social protection department to write to the Ministry of Health to mandate social workers to conduct pre-compensation analysis for TIMS affected key populations before referring them for further processing in Botswana.
- Establish a National Stop TB Platform with clear ToRs for the TIMS subcommittee in Eswatini.

5.1.6. Cross-border and Regional Collaboration:

Responsible Agency: Ministries of Health, Labor, Mining, Foreign Affairs, Regional Bodies

- Develop bilateral agreements and harmonise health regulations for migrant miners across borders.
- Promote regional cooperation and shared policies to address the cross-border nature of TB in the mining sector.
- Develop a TIMS Advocacy and communication strategy based on best practices from TIMS Phase 1, enhancing cross-border information sharing and policy alignment.

5.1.7. Infrastructure Development:

Responsible Agency: Ministries of Health, Mining, Local Authorities

- Establish Framework for permanent health facilities and mobile units in mining areas to improve access to services across the region.
- Draw Implementation framework for the TIMS Phase 1 dust control toolkit and other occupational health and safety measures.

5.2. Intervention Area 2: Improving Programmatic Management of TIMS

5.2.1 Expansion and Accessibility of Health Services

Responsible Agency: Ministries of Health, Mining, CSO

- Procure mobile occupational health service trucks, establish mobile OHSCs, and conduct outreach campaigns in Angola.
- Privatise existing OHSCs, establish new OHSCs, and integrate the TIMS CRG action plan into national frameworks in Botswana.
- Expand OHSCs to more regions, establish mobile OHSC units, and conduct outreach campaigns in Eswatini.
- Malawi: Extend mobile van clinical services to all regions and integrate TB services into existing health systems in Malawi.
- Establish fixed OHSCs and conduct demand creation activities in Madagascar
- Scale up mobile and permanent occupational health clinics, and implement subsidised transportation schemes in Zimbabwe

5.2.2. Digitalization and Efficiency

Responsible Agency: Ministries of Health, Mining, Local Authorities

- Digitalize care, treatment, compensation, and social protection processes using AI and portable X-ray machines in Angola.
- Digitalize care and treatment processes in Madagascar.

5.2.3. Training and Capacity Building

Responsible Agency: Ministries of Health, Health Training Institutions

- Train Community Health Workers (CHWs) in using AI and X-ray technology in Angola.
- Update training materials and conduct seminars on human rights and gender-related issues in Botswana
- Train CHWs and volunteers, focusing on mentoring in Eswatini.
- Develop a structured plan for monitoring visits and conduct decentralised supervision in Malawi.
- Expand training programs for healthcare workers and community health worker programs in Zimbabwe.

5.2.4. Community Engagement and Rights Awareness

Responsible Agency: Ministries of Health, Mining, CSO

- Conduct "know your rights" campaigns and demand creation activities in Angola.
- Botswana: Design advocacy and communication materials to educate on human rights and reduce stigma.
- Implement a "Know Your Rights" campaign and develop a human rights and ethics literacy module in Eswatini.
- Adapt and implement advocacy and communication toolkits in Madagascar.
- Launch information campaigns and community engagement initiatives to foster health-seeking behaviours in Zimbabwe.

5.2.5. Occupational Health and Safety

Responsible Agency: Ministries of Health, Labour. Mining

- Review infection control guidelines, conduct assessments, and provide PPE in Angola.
- Establish a national TIMS sub-committee to focus on TB hygiene in Botswana.
- Develop an Active Case Finders program with a rights-based approach in Eswatini.
- Ensure the availability of TB prevention and safety measures in Madagascar.
- Strengthen enforcement of safety regulations and provide protective equipment in Zimbabwe.

5.3. Intervention Area 3: Eliminating TIMS-Related Stigma and Discrimination:

5.3.1. Integration, Community Awareness and Educational Campaigns

Responsible Agency: Ministries of Health, Labor, Mining, CSO

- Integrate TIMS stigma-related findings and actions into existing HIV anti-stigma programs, including engaging a consultant and validating the revised program in Angola.
- Conduct community-based awareness campaigns and educational programs to combat stigma and dispel myths surrounding TB. Use culturally relevant materials and messages delivered through various mediums such as local radio, community meetings, and social media in Zimbabwe and Madagascar.
- Foster an inclusive and supportive environment for individuals affected by TIMS, enabling them to access healthcare services without fear of prejudice across the region.
- Sensitize lawmakers, law enforcement agents, policymakers, and media partners on TIMS-related issues, the impact of stigma, and the use of supportive language across the region.

5.3.2. Network and Peer Support

Responsible Agency: Ministries of Health, CSO

- Establish a network of gender-sensitive TIMS survivors' champions, paralegals, and support groups for peer-to-peer support in Angola, Botswana and Madagascar.
- Advocate for active engagement with key population representatives in ACF initiatives and provide comprehensive training for them in Eswatini.

5.3.3 Healthcare Worker Training

Responsible Agency: Ministries of Health, Labor, Mining

- Train healthcare workers on human rights, medical ethics, confidentiality, and non-judgmental communication skills to eradicate stigma and discrimination. Implement strict confidentiality policies within healthcare facilities in Angola, Zimbabwe, Eswatini, and Malawi.
- Conduct refresher stigma and discrimination training for healthcare facilities in mining areas in Malawi.

5.3.4. Legal and Policy Protections

Responsible Agency: Ministries of Health, Labor, Mining, Justice, CSO

- Develop legal and policy protections for people affected by TB to be free from stigma and discrimination in healthcare settings, law enforcement, employment, and the community in Eswatini.

5.3.5. Funding and Resource Allocation

Responsible Agency: Ministries of Health, Labor, Mining, CSO

- Increase funding to support TB survivors, civil society, and key and vulnerable populations in building evidence of stigma and discrimination, and in developing effective mitigation strategies, including advocacy, litigation, and law and policy reform in Zimbabwe.

5.4. Intervention Area 4: Intensifying Support for a Gender-Sensitive and Gender-Transformative Response to TIMS:

5.4.1 Strengthening Women's Associations, Capacity Building and Economic Empowerment

Responsible Agency: Ministries of Health, Labor, Mining, CSO

- Establish and provide financial and technical support to Women in Mining Associations, focusing on advancing and empowering women in the mining sector, including wives and widows of miners. Allocate resources to support the associations' operational sustainability across the region.
- Conduct needs assessments to propose tailored income generation packages to enhance income-earning potential and promote economic self-reliance across the region.
- Develop and implement customized income generation packages for spouses of miners and ex-miners across the region.
- Offer capacity-building programs, including financial education and vocational training, to widows to improve their proficiency in income-generating activities across the region.
- Ensure access to micro-financing, income-generating opportunities, and enhanced social support by women, spouses of miners, and ex-miners in Eswatini.
- Ensure equal access for women to the labour market and social security systems in Madagascar.
- Provide training and skill development opportunities for women in mining communities to enhance their knowledge, capabilities, and confidence in

participating effectively in the design, implementation, and evaluation processes of TIMS interventions across the region.

5.4.2. Advocacy, Awareness, and Engagement

Responsible Agency: Ministries of Health, Labor, Mining, CSOs, Mining Companies

- Provide financial support to gender-focused TIMS Civil Society Organizations (CSOs) and sub-Key Population (KP) organizations in engaging in SADC TB mining sector dialogues and global initiatives on TB, gender, occupational diseases, and air quality across the region.
- Develop TB communication and information materials that are empowering and inclusive for women and gender-diverse people, ideally developed with input from those audiences across the region.
- Involve women from mining associations in activities aimed at raising awareness among miners about gender issues and promoting gender equality in the mining industry across the region.
- Advocate for development of policies to advance gender equity, including gender representation and pay equity in the TB workforce, facility-based service quality, stigma reduction, and community-based case finding across the region.
- Conduct community awareness campaigns to promote male involvement in supporting the empowerment of women's decision-making in health-related matters across the region.
- Develop and implement gender-specific health education programs that address the unique challenges and health behaviours of men and women in mining communities. Focus on breaking the stigma around seeking medical help for men and empowering women to prioritize their own health needs across the region.
- Promote policies in mining companies that support equal opportunities for women in all job roles, including technical and leadership positions across the region.
- Conduct workshops and sensitization sessions in mining communities and workplaces to challenge harmful gender norms and encourage supportive practices that enable all members to seek and receive medical care without stigma or hindrance.

5.4.3. Integration of Traditional Healthcare Practices and Gender-Sensitive Service Delivery

Responsible Agency: Ministries of Health, Labor, Mining, CSO

- Integrate traditional healthcare practices into the formal healthcare system through education and awareness-raising among traditional medicine practitioners. Enlist

these practitioners as champions in disseminating TB awareness to their clientele across the region.

- Implement gender-sensitive demand creation strategies for the uptake of TB preventive therapy (TPT) services for miners and ex-miners in Eswatini.
- Sensitize healthcare workers in both public and private sectors on the need for incorporating a gender-sensitive approach to TB in their work.
- Establish targeted health services within mining communities that are accessible to women and transgender people, considering their specific health risks and barriers in Zimbabwe.

5.5. Intervention Area 5: Strengthening Partnerships with Key Stakeholders:

5.5.1. Strengthening Civil Society and Key Population Engagement

Responsible Agency: Ministries of Health, Labor, Mining, CSO

- Partner with influential community organizations like the Swaziland Migrant Mine Workers Association and the Swaziland National Ex-Miners Workers Association or leaders to develop TB initiatives in Eswatini.
- Conduct stakeholder mapping and engagement exercises to identify relevant parties and establish a consultative committee across the region.
- Resource Mobilization and Accountability
- Organize meetings for potential donors to commit support to TB programs as part of corporate social responsibility across the region.

5.5.2. Establishing Coordination Frameworks and Multi-Sectoral Collaboration

Responsible Agency: Ministries of Health, Labor, Mining, CSO

- Create a National TB Platform for multi-sectoral collaboration and alignment with international TB control practices, addressing socio-economic factors impacting TB in the mining sector across the region.
- Advocate for TIMS Key Populations' involvement in the Global Fund Country Coordinating Mechanisms and Chamber of Mines meetings.
- Develop and implement a collaborative framework between TIMS and Non-Communicable Disease (NCD) programs to address unhealthy lifestyles among miners and ex-miners.
- Establish TIMS coordination structures aligned with the national Multi-sectoral Accountability Framework at regional and mining community levels in a Malawi.
- Reactivate the national TB CSO Network and strengthen connections with the National Stop TB Partnership in Malawi.

- Establish a National Stop TB Partnership to facilitate collaboration in Madagascar.
- Develop a formal coordination framework under the National Stop TB Partnership Zimbabwe to define roles, responsibilities, and communication protocols. Create a platform for regular updates and information exchange on TB projects and initiatives.

5.5.3 Community Engagement, Support Systems, and Access to Healthcare

Responsible Agency: Ministries of Health, Labor, Mining, CSO, Global Fund CCM

- Create networks of TIMS survivors' champions, paralegals, and support groups for peer-to-peer support and community resilience in Eswatini.
- Develop and adhere to guidelines for hospital-based ombudsman mechanisms to promote patient rights and satisfaction in Malawi.
- Conduct mapping to ensure health facilities are within the WHO-recommended radius from major mining areas to improve healthcare access across the region.
- Work with the Christian Health Association of Malawi to develop a community-based health insurance scheme for TB, providing inclusive and culturally sensitive services in Malawi.
- Involve women in reviewing and finalizing the child labour framework and disseminating information in schools and homes in Madagascar.
- Engage mining companies to provide PPE and implement TB screening and prevention programs in Zimbabwe.
- Involve miners and ex-miners in developing strategic plans to ensure tailored interventions in Zimbabwe.

5.6. Intervention Area 6: Monitoring and Evaluation

5.6.1. Development of Indicator Matrices and Accountability Frameworks

Responsible Agency: Ministries of Health, Labor, Mining, CSO, Research Institutions

- Engage a consultant to create an Indicator Matrix and Accountability Framework, including TB stigma indicators in Angola and Eswatini. Validate, disseminate, and provide training on their effective use.
- Set up oversight committees and strengthen compliance measures to close the gap between policy design and execution.

5.6.2. Community-Led Monitoring (CLM) and Data Integration

Responsible Agency: Ministries of Health, Labor, Mining, CSO, Research Institutions

- Implement real-time Community-Led Monitoring (CLM) (OneImpact) for social accountability, disaggregated by age, gender, and key and vulnerable population status in Angola. Engage a consultant to create a CLM Plan and Tools, and train

community members and frontline workers. Ensure the CLM system tracks prioritized indicators like child labour and occupational health violations, including anonymous reporting mechanisms and legal action.

- Develop and advocate for integrating the TIMS Human Rights and Gender indicator matrix (scorecards) into the national Community-Led Monitoring system in Botswana.
- Enhance the existing CLM system (Stop TB "OneImpact") to incorporate TB key populations in Eswatini.
- Develop a detailed Eswatini TIMS CLM Plan for community engagement, feedback mechanisms, and data collection. Train community leaders and organizations for proficient use of the CLM system.

5.6.3. Regular Monitoring, Evaluation, and Research Activities

Responsible Agency: Ministries of Health, Labor, Mining, CSO, Research Institutions

- Monitor and evaluate the implementation of the TIMS CRG action plan.
- Conduct mid-term and end-of-program evaluations for the TIMS CRG to measure progress and impact.
- Implement a robust monitoring and evaluation system to track integrated TB control and prevention strategies, making necessary adjustments in Angola.
- Develop a periodic monitoring program to assess silica levels and control measures' effectiveness, creating an Air Quality Index for TIMS Key Populations (KPs).
- Assess silica levels in mines and regularly update and implement the TIMS dust control toolkit in Botswana.
- Conduct a KAP study to gather insights into community attitudes towards TB, informing the development of behaviour change communication (BCC) and information, education, and communication (IEC) materials in Malawi.
- Periodically conduct TB legal and human rights scorecard analyses.
- Fund TB survivors and CSOs to monitor, document, and report human rights violations and advocate for reforms.
- Conduct TB stigma assessment studies to establish baseline data and guide the development of targeted interventions and evidence-based strategies in Eswatini, Malawi, and Madagascar.
- Ensure appropriate and updated tools (registers, equipment) are in place to capture sex-disaggregated data for TB incidence in the mining centers effectively.
- Provide necessary equipment, conduct training for healthcare providers, and implement regular monitoring to ensure data quality.
- Adopt and implement a real-time Community-Led Monitoring (CLM) approach to ensure social accountability for addressing gender-related barriers to TB services.
- Implement structured monitoring visits, random inspections, and community-led monitoring in Malawi.

- Reform the tracking and tracing program to include community-led monitoring in Botswana.
- Conduct research on the barriers faced by Adolescent Girls and Young Women (AGYW) in mining areas to gain a deeper understanding of, develop targeted interventions and strategies to address, their unique challenges and needs in Malawi.
- Develop a rights-based monitoring and evaluation framework for TB interventions.
- Establish costed sustainability plans for TIMS projects and interventions.

5.6.4. Cross-Sectoral and Cross-Border Collaboration

Responsible Agency: Ministries of Health, Labor, Mining, Foreign Affairs, CSO
- Develop protocols for data collection, analysis, and secure exchange between the Ministries of Mining and Health in Eswatini.

5.6.5. Targeted Interventions for Key Populations

Responsible Agency: Ministries of Health, Stop TB Partnership
- Based on the TIMS CRG Assessment, initiate TB Key and Vulnerable Population size estimations using the Stop TB Partnership's approach.
- Ensure TB programs reach TIMS Key and Vulnerable Populations (KVPs) for targeted interventions and resource allocation within the mining sector.

6. LIMITATION

The qualitative methods utilized in this study, including key informant interviews and focus group discussions, may have introduced certain biases that could have influenced the data collection process and subsequent analysis. These biases might include researcher bias, participant bias, social desirability bias, and recall bias, which are inherent limitations of qualitative research approaches.

Again, the selection of key informants among key populations was based on their knowledge, experience, perspectives, and expertise on the subject matter, as identified by the National TB Control Program (NTCP). This selection process may have introduced selection bias into the study, potentially limiting the representativeness of the sample and the generalizability of the findings to the broader population of interest.

The study also captured a relatively small number of sub-key populations, which may limit the generalizability of the findings to all sub-key populations affected by tuberculosis (TB) in the mining sector. While the insights provided by the sub-key populations were valuable for the qualitative assessments conducted, the findings may not be fully representative of the diverse experiences and challenges faced by all key populations.

Finally, this study aimed to provide an exploratory understanding of the CRG challenges faced by key populations in the mining sector related to TB, rather than drawing definitive conclusions. The findings should be interpreted within the context of the study's scope and limitations, and further research may be necessary to validate or expand upon the identified themes and recommendations.

Despite these limitations, the study employed rigorous qualitative research methods and sought to gather diverse perspectives from key stakeholders and affected populations. The findings and recommendations presented in this report can serve as a valuable foundation for informing future interventions, policies, and research initiatives aimed at addressing TB-related challenges in the mining sector and promoting the well-being of key populations.

7. ANNEXES

Annex 1: StopTB KPs Prioritization tool

Key Populations to Consider	Score 1	Score 2	Score 3	Score 4	Score 5	Risk, Barrier and new insights Scores Sub-Total (Sum of Scores 1-5) Max 5	Score 6	Combined Score to Facilitate Prioritization Discussion	
	Exposure Risks	Biological Risks	Barriers to care access	Barriers to care completion	Likelihood of new insights		Estimated (and/or official data, if available) Contribution to the Country's TB Disease Burden (Active TB cases of all forms)	Total Score (Sum of Scores 1-6) Max 10	Prioritization Discussion and Rationale for Prioritized Key Populations
	Exposure to infectious people/ concentrated bacilli	Likelihood of immunosuppression/susceptibility to developing active TB	Gender, legal, social and structural barriers	Stigma, life circumstances, access continuation difficulties	Social dynamics insufficiently understood		1 – Very Low (<1%) 2 – Low (1-3%) 3 – Medium (3-5%) 4 – High (5-10%) 5 – Very High (>10%)		
	0 – Low 0.5 – Medium 1 – High	0 – Low 0.5 – Medium 1 – High	0 – Low 0.5 – Medium 1 – High	0 – Low 0.5 – Medium 1 – High	0 – Low 0.5 – medium 1 – High				
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