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1.0 Background and Situation

Globally, an estimated 10.0 million (range, 9.0–11.1 million) people fell ill with TB in 2018 (WHO TB Global report). The burden of disease varies enormously among countries, from fewer than five to more than 500 new cases per 100,000 population per year. There were an estimated 1.2 million TB deaths among HIV-negative people in 2018 (a 27% reduction from 1.7 million in 2000), and an additional 251,000 TB deaths among HIV-positive people. The burden of drug-resistant TB is of major concern at global, regional and country level. In 2018, 3.4% of new TB cases and 18% of previously treated cases had MDR/RR- TB, accounting for a global burden of half a million new cases of rifampicin-resistant TB (RR-TB), amongst which 78% multidrug-resistant TB. A total of 7.0 million new cases (70%) of TB were notified in 2018, and most of the increase in global notifications of TB cases since 2013, is explained by trends in India and Indonesia.

Geographically, most TB cases in 2018 were in the World Health Organization (WHO) regions of South-East Asia (44%) and Africa (24%). Africa has the highest burden of TB per 100 thousand populations amongst all regions (231), translating into 2,450,000 cases in 2018. The region bearded 33% of the global mortality of HIV negative people (397,000 deaths) and 84% of the global HIV-positive TB mortality (211,000 deaths). It also accounts for a significant proportion of RR-TB cases in the global burden, 77,000 of the global 500 thousand RR-TB are estimated to occur in Africa.

The burden of TB has been a problem of global concern for a long time, and global development goals and TB strategies have placed TB elimination as a public health problem, at the core of their goals. By 2015, the MDG target of halting and reversing TB incidence by 2015 was achieved globally, in all six WHO regions and in 16 of the 22 high TB burden countries (HBCs). However, the Stop TB partnership targets of reducing the TB prevalence was achieved in three WHO regions, and of reducing TB mortality, achieved in four WHO Regions.
In 2014 and 2015, all Member States of the World Health Organization (WHO) and the United Nations (UN) committed to ending the TB epidemic, by endorsing WHO’s End TB Strategy and by adopting the UN Sustainable Development Goals (SDGs), whose target 3.3 includes ending the TB epidemic by 2030. The End TB Strategy defines milestones (for 2020 and 2025) and targets (for 2030 and 2035), aimed at reducing TB incidence by 90% and mortality by 95% by 2035, when compared to 2015. As a followup, the first ever global ministerial conference on ending TB was held in November 2017, leading to the Moscow Declaration to End TB, reaffirming the global commitment to end TB and MDR-TB, and to mobilise funding for TB prevention, care and research.

Despite reductions in global TB deaths, TB remains among the top five causes of death in Sub-Saharan Africa, and half of the world’s 30 high-burden TB countries for TB, and/or TB/HIV, and MDR-TB are located in this region. All 10 Southern Africa countries are rated as high-burden countries for TB, and/or TB/HIV, and MDR-TB, representing nearly one fourth of the world’s 30 high-burden countries, with all countries above the WHO threshold for a TB emergency (250 cases per 100,000). The unprecedented rise in TB cases in Southern Africa has been largely driven by the HIV epidemic. On the other hand, mining has been historically associated with some of the highest TB incidence in TB key populations. 33% of new TB cases in Sub-Saharan Africa are attributed to mining1.

In Southern Africa, the burden of TB is high in mining and peri-mining areas, cross-border areas, labour-sending communities and along the region’s transport corridors.

The four SATBHSS project countries are listed amongst the 30 high-burden countries for TB, TB/HIV and/or MDR-TB in 2019. All project countries except Mozambique met the MDG target to halt and reverse TB incidence, and only Lesotho is on track for the 2020 milestones of the end TB strategy. TB incidence remains high, and ranges from 181 in Malawi to 611 per 100,000 in Lesotho, with high TB/HIV co-infection rates in all countries, estimates ranging from 36% in Mozambique to 65% in Lesotho, and TB mortality remains high in all the countries. The burden of MDR-TB cases amongst both new and previously treated cases is on the rise in all project countries, and it reached 20% amongst previously treated cases in Mozambique, the highest MDR-TB burden country amongst them all.

The SATBHSS project has significantly contributed to strengthen efforts to end TB in the project countries, and additional efforts are required to attain the end TB targets. Building upon three years’ achievements of establishing linkages with stakeholders for strengthening cross-border TB and disease surveillance, capacity in DS and MDR-TB and detection and management, including psychosocial support to MDR-TB patients, and TB diagnosis capacity, ECSA-HC will further strengthen these through improvement of regional coordination and collaboration.

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2.0 Key Accomplishments, Challenges and Bottlenecks

The MTR for the SATBHSS project recently conducted, highlighted remarkable advances in the regional support for strengthening efforts towards ending TB in the project countries, which will serve as foundation for the following stages of the project implementation. The support was conducted through direct implementation of regional activities such as the studies and cross-border activities, but more emphasis was put on technical assistance provided to the countries in support of the respective investment plans.

2.1 Innovative Prevention, Detection, and Treatment of TB

2.1.1. Subcomponent 1.1: Enhancing TB Case Detection and Treatment Success

Below is a summary of the key achievements under this component:

Regionally
ECSA-HC:

(i) Strengthening harmonisation of regional protocols and cross-border collaboration for TB care:
(a) completed an assessment of the stage of domestication of harmonised framework on TB management; (b) facilitated dialogue to develop action plan to optimise implementation of the recommendations of the assessment within the CoP on continuum of care; (c) a roadmap was developed to implement the recommendations including tools, dissemination to key stakeholders and training of trainers;

(ii) capacity building of experts through regional and global centres of excellence for TB and PMDT, for strategies for finding missing cases, MDR-TB management with focus on introducing new treatment regimens and patient support;

(iii) Technical support enhanced TB case detection in general and in key populations:
(a) facilitated knowledge sharing on implementation of Practical Approach to Lung Health (PAL), community based TB case finding, and sputum transport with 13 experts supported; (b) trained 25 central level and frontline workers on TB detection and management in correctional facilities; (c) facilitated knowledge exchange and training on integrated TB screening for healthcare workers - wellness model in Zimbabwe covering 16 participants;

(iv) Strengthening quality of TB care for key populations:
(a) assessed and supported development and implementation quality improvement interventions in clinics for miners, examiners and families and provided technical assistance to develop performance based funding framework for CBO hired for tracking and tracing in Lesotho; provided training of 30 country experts on continuous quality improvement on TB care and 27 experts on data use to improve quality of TB care and facility based mentorship for quality improvement;

(v) supported implementation of TB infection strategies in health settings and control and of TB in high-risk groups including correctional facilities including development of guidelines, SoPs and tools for recording and reporting for healthcare workers screening; developing guidelines for TB control in correctional facilities in Lesotho and guidelines, policy SoPs and checklists for TB infection control; trained over 150 experts through technical assistance within countries on TB infection control and conducted facility mentorship for risk assessment and implementation.
of TB infection control in health facilities. Technical assistance was also provided to develop rollout plans for infection control and HCW screening. Technical assistance for development of infection TB risk assessment checklists and dashboards in ongoing to enhance the program further.

**Country level:**

**Lesotho**

*Enhancing TB case detection and treatment success*

A number of interventions were implemented under this sub-component in the period under review. These interventions were aimed enhancing TB case detection and improving TB treatment outcomes. These interventions are discussed below.

*Intensify case finding for TB among miners, ex-miners and their families through the TEBA point of care sites*

During the reporting period, all planned activities were carried out. Achievements during the period include continued mentorship and capacity building to all TEBA facilities by ICAP. ICAP also supported implementation of three facility-specific quality improvement plans to address retention in care and viral load monitoring in the three (3) POCs. ICAP continued to support the TEBA POCs to deliver quality health care services and increase TB case notification. In June 2019, the technical support provided to TEBA POCs by ICAP came to end and a close-out meeting was held with TEBA and MOH. A handover plan was discussed and agreed upon.

![Figure 1: TB screening at TEBA POCs](image)

1,31159 screens were performed to clients who visited TEBA points of care in 2019, 51% of the screens were done to family members, 30% to ex-miners while 18% was miners. Proportion of presumptive cases among clients screened was highest among ex-miners at 6% while miners and family members recorded 2%.

The total number of TB cases notified in 2019 from the TEBA POCs was 164. The number of cases was the highest among ex-miners at 113 followed by 33 family members. The lowest number of
cases was registered among the miners with 13. The positivity rate within the three categories was highest among ex-miners with 4.7%, family members achieved 3.2% and while 2.7% was registered by miners. Even though more screening was provided to family members the highest yield of TB cases was found among the ex-miners. This demonstrate that the high burden of TB is among ex-miners and as a result more efforts should target this group.

Figure 2: TB cases notified from TEBA POCs in 2019

**TB data quality assessments, mentoring and supportive supervision**

The field M&E officers conducted a data verification exercise to the following facilities implementing the client satisfaction tool; Machabeng Hospital, Quthing Hospital, Nts’ekhe Hospital, Tebellong Hospital, Seboche Hospital, Mokhotlong Hospital, Paray Mission Hospital and St. James Mission Hospital. The purpose of the visit was mainly to verify 2018 TB data in all the quarters by comparing data from the DHIS2 and hard copies of aggregated data and the source documents from the facility (TB treatment register and TB screening and detection register) to assess the implementation of client satisfaction tool and challenges faced by TB officers and data clerks during the implementation process.

Facilities were doing well in terms of recording patients’ information with little inconsistencies in their reports. It was also observed that among all the hospitals visited, most of TB patients in Quthing hospital were found “dead” in the register. In regard to the implementation of client satisfaction tool, facilities did not experience any major challenges. Patients eligible for the interview were missed when staff were out for the workshops, or on leave and when patients come to the facility on dates not assigned to them. In conclusion, all facilities visited were found to have started implementing the tool.

**Quality improvement initiatives and data use for decision making to improve TB case finding and TB treatment success**

Training on Continuous Quality Improvement (CQI) was held for 43 health workers from 18 high volume sites (hospitals). The training was facilitated with the technical support from ECSA-HC. The main purpose of the training was to introduce CQI and to assist the facilities to identify CQI projects that will focus on improving case notification and improve treatment outcomes.
After the training the NTP M&E staff made a decision to initiate quality improvement in six hospitals with a view to roll it to other 12 hospitals at later stage. The first six facilities were also meant to provide lessons before rolling it down to other facilities.

Two teams from NTP were established and each was assigned to three facilities. The facilities selected were Maluti hospital, Motebang hospital, Berea hospital, Bots’abelo hospitals, Joseph hospital and Quthing hospitals. Initial visits were made by the two teams to support the facilities to identify quality improvement projects. The quality improvement projects were identified, and implementation plans developed with facilities. The quality improvement projects identified focused on increasing TB case detection and improving treatment outcomes. In addition, quality improvement teams were established. Furthermore, mentoring visits were done to the six facilities to support them to implement the quality improvement projects.

In order to monitor progress during implementation of the quality improvement projects, a tool was developed with the technical support from ECSA-HC and shared with the six facilities in October 2019. According to the tool, facilities are required to report expected results on monthly basis. As of end of December 2019, reporting from these facilities was showing little progress since implementation of the quality improvement projects had just started.

Since the quality improvement interventions will still continue in 2020, an improved approach will be required to provide ongoing support to facilities. A clear roll-out plan to other facilities will also be developed 2020. At the end of 2019, data from the facilities trained on CQI was extracted from DHIS2 to establish if the training had an impact on TB case detection. The results are shown below.

Data extracted from DHIS2 on hospitals trained in CQI shows some improvement in the total number of TB cases. The training took place in May 2019 and as can be noted the total number of TB cases notified in the last two quarters of 2019 were higher than quarter one and quarter two of 2019, they were also higher than TB cases in 2017 and 2018 on similar periods i.e. quarter three and quarter four.
**Procurement of therapeutic feeding for TB patients for improved outcomes**

Under this project, provision has been made to provide nutritional support for all TB patients aged two and above. Towards the end of 2018, sensitisation of facilities was done through the training of the healthcare workers. The training included supply-chain management for nutritional supplements. Recording and reporting tools were also developed and finalised in the last quarter of 2018. The tools were integrated into the DHIS2 in first quarter of 2019.

![Figure 4: TB patients receiving plumpy soy by months](image)

The uptake of this nutritional supplement was satisfactory with 199 facilities having it on stock by the end of the year. Coverage of plumpy soy by facilities was 95% by December 2019, the total number of TB patients receiving the plump soy nutritional supplement was 3,373 by November 2019. The introduction of this nutritional supplement is expected to improve the treatment outcomes.

Figure 1 below shows a comparison of TB treatment outcomes in 2018 and 2019. TSR improved increased by 2% to 78% in 2019, case fatality rate fell by 1%, loss to follow up declined by 1% to 4%, cases not evaluate also fell from 4% to 3% in the two years. While there is a 2% increase in TSR to 78% it falls short of the 2019 national target of 84%.

![Figure 1: Treatment outcomes 2018 and 2019](image)
Malawi

Identify and orient groups of miners and former miners to provide community interventions and health education.

A total of 36 groups out of the planned annual target of 48 were formed during the period under review representing a 75% achievement rate. A total of 360 community members were oriented from these 36 groups.

![Figure 2: Miners and ex-miners groups oriented](image)

To date a total of 208 groups have been formed with a total number of 3,094 volunteers oriented.

The groups received orientation on TB and other lung conditions. The oriented volunteers will be peer educators providing their colleagues with the much-needed support in terms of provision of TB prevention messages and directing their peers to facilities and structures like sputum collection points where they can be assisted accordingly when they want to be screened for TB.

Through this activity, the wider community of miners and ex-miners will acquire the necessary knowledge related to TB and other occupational lung conditions and promote healthcare-seeking behaviour among them.

Conduct annual district open days and World TB day commemoration

Malawi joined the rest of the World in commemorating the World TB Day on the 26th of March under the theme, “It’s time for a world without TB – know your TB status”. The Project supported activities of the main function for the commemoration held at Katoto Secondary School ground in the City of Mzuzu.

![Figure 3: People queuing up for TB screening utilising the presence of a mobile diagnostic unit during the world TB day commemoration in Mzuzu](image)
Implementing districts on the other hand, have during the period under review held open days where communities were provided with information related to TB prevention, detection and treatment. The meetings utilised drama performances, songs and dance as another form of disseminating TB messages.

**Orientation of health workers in systematic TB screening**
The project continued to support orientation of health workers in systematic TB screening in 2019 as one way of supporting early detection of TB as an essential element of improved health outcomes for people with TB, and to reduce TB transmission more effectively. A total of 55 health workers out of the planned 180 annual targets underwent this orientation in the period under review representing a 31% achievement rate. With this number then, the project has supported the orientation of 443 healthcare workers in systematic TB screening since the start of the project in 2017.

**Conduct infection prevention and control trainings**
Infections in health facility set-ups pose a big threat to patient and healthcare workers welfare. It is therefore important that necessary measures on infection control be in place to prevent both healthcare workers and patients from infections when they are in facilities.

During the period under review, the project supported all nine districts with orientations for healthcare workers on infection prevention and control. A total of 270 out of 753 (36%) healthcare workers were oriented, including 54 at district level and 216 at health facility level.

The trainings have assisted healthcare workers understand topics around hand washing, correct and consistent use of personal protective equipment among other key topics.

**Conduct death audits**
Death audits are another key activity that was undertaken during the period under review. This activity helps the involved facilities understand in detail the causes of death for TB patients. This could be the medical causes and other avoidable factors. In undertaking the death audits, the facilities are assisted in improving on their weak areas by prioritising areas to strengthen in order to avoid some unnecessary deaths of patients under their care.

A total of 10 out of 18 sessions of such audits were undertaken representing 56% achievement rate. A total of 79 deaths were audited.

The findings from such audits showed that there were so many other factors that led to deaths of patients. These include late reporting to facilities for diagnosis, ART defaulting and other conditions like pneumonia.

**Conduct community sputum collection point committee review meetings**
As one way of ensuring that community sputum collection points continue to provide the much-needed support for TB service provision at community level, the Project supported review meetings for them during the period under review. A total of 8 review meetings across the districts were supported. Through these meetings 263 volunteers discussed a number of wide-ranging issues affecting their day to day operations in serving their communities on TB-related issues including TB screening, sputum sample collection and transportation, record keeping and reporting among other key topics.
Mozambique

Enhancing TB case detection and treatment success
Following the strengthening of interventions to identify lost cases and achieve satisfactory treatment success rates, NTP with the support of SATBHSSP planned to reinforce TB screening in high-risk groups (miners, ex-miners, health workers), strengthening of the sample transport system and infection control.

TB screening and link to health services in mining and former mining communities in Gaza province
During the reporting period, NTP implemented community-based TB activity in the Gaza province. The package of interventions consisted of TB screening for index case contacts, door-to-door screening of miners, former miners and their cohabitants, psychosocial support, support for adherence to the services and reinforcing the transportation of samples from the community to the health facility.

Results achieved
Through Community TB active case finding, in the Gaza province, 5,702 were screened for TB and of these 986 diagnosed for TB, meaning 19% of all notified TB cases (refer table #1 for details).

Table 1. Distribution of TB cases by the cascade of TB services in the community. Contribution of SATBHSSP.

<table>
<thead>
<tr>
<th>Reported by HDDs (2019)</th>
<th>Contribution of SATBHSSP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Index case HHCs</td>
</tr>
<tr>
<td># People Screened for PTB</td>
<td>7,854</td>
</tr>
<tr>
<td># People screened and diagnosed for PTB</td>
<td>5,195</td>
</tr>
<tr>
<td># Bacteriologic confirmed PTB-S cases</td>
<td>923</td>
</tr>
<tr>
<td># Bacteriologic confirmed PTB-MR cases</td>
<td>127</td>
</tr>
<tr>
<td>#PTB patients diagnosed and linked to C&amp;T</td>
<td>60</td>
</tr>
<tr>
<td>#PTB in treatment receiving psychological support for adherence</td>
<td>-</td>
</tr>
<tr>
<td>#LTFU cases identified</td>
<td>106</td>
</tr>
<tr>
<td>#LTFU cases identified and linked to care</td>
<td>95</td>
</tr>
</tbody>
</table>

Source: ADPP and DPS –Gaza quarterly reports, 2019
Systematic screening of mining workers (including artisanal miners)
MoH noted significant progress in the coverage of TB screening in legal and informal miners. In addition to screening TB in affected miners in South Africa in Ressano Garcia, MoH expanded this activity to four priority provinces.

The approach consisted of education to raise the level of awareness about the disease and generate demand, followed by systematic screening of mining workers at defined points in the provinces of Maputo (Ressano Garcia) and Manica, screening campaigns in all other provinces, tracking domestic contacts, connection to services for suspected or diagnosed cases, DOTS and psychosocial support for strengthening adherence.

Key results
As result, 24,727 mineworkers screened in all the priority sites, of this, 279 were diagnosed with TB and linked to the services. In Manica province, the SATBHSSP is supporting artisanal mine workers health screening.

Table 2. Screening of TB among mine workers (including artisanal miners) in SATBHSSP priority sites in 2019.

<table>
<thead>
<tr>
<th></th>
<th>Maputo</th>
<th>Gaza</th>
<th>Inhambane</th>
<th>Manica</th>
<th>Zambezia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total screened</td>
<td>AM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24,360</td>
<td>107</td>
<td>60</td>
<td>185*</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Ex-M</td>
<td>0</td>
<td>2,597</td>
<td>571</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24,360</td>
<td>2,704</td>
<td>631</td>
<td>185</td>
</tr>
<tr>
<td>Diagnosed and linked to C&amp;T</td>
<td>AM (%)</td>
<td>3 (0,01)</td>
<td>2 (1,9)</td>
<td>6 (1,0)</td>
<td>34 (18,4)</td>
</tr>
<tr>
<td></td>
<td>Ex-M (%)</td>
<td>0</td>
<td>73 (2,8)</td>
<td>115 (18,2)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3</td>
<td>75</td>
<td>121</td>
<td>40</td>
</tr>
<tr>
<td>Bact. confirmed Total</td>
<td>2</td>
<td>34</td>
<td>96</td>
<td>20</td>
<td>95 (100%)</td>
</tr>
</tbody>
</table>

Source: DPS quarterly reports. Period of report: 2019

Strengthening of sputum samples transport systems
As part of the search for lost cases, the NTP gave priority to strengthening the transport of samples to increase access to TB diagnostics. Previously, the system covered the transport of samples between the Province and the reference laboratories, leaving gaps at the intra and inter-district level. At this level it was done irregularly and with low coverage using inappropriate circulating means. The purchase of motorcycles and allocation of motorcycles reinforced the districts’ capacity to transport samples from the HUs to centres with GeneXpert and to provincial capitals (sample collection points for TB reference laboratories).
To assess the effectiveness of this activity, NTP developed monitoring and evaluation and sample transport plans. For this purpose, the existing registration instruments are used, and a quarterly report model has been prepared and the quality of implementation is enhanced through quarterly supervision visits and technical support.

**Results**

During the reporting period, 8,526 samples were transported and submitted to GeneXpert, of which 12.4% were positive for TB and all patients were successfully referred to TB services (please, refer table 3 for details).

**Table 3. Cascade of SS transport service in the SATBHSSP priority sites, 2019.**

<table>
<thead>
<tr>
<th>Province</th>
<th># SS transported using motorbikes</th>
<th>#SS submitted to GeneXpert/smear</th>
<th># SS MTB + (GeneXpert/smear)</th>
<th>#Patients linked to TB C&amp;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zambezia</td>
<td>1,697</td>
<td>1,697</td>
<td>141 (8.3%)</td>
<td>141</td>
</tr>
<tr>
<td>Tete</td>
<td>648</td>
<td>648</td>
<td>88 (13.6%)</td>
<td>88</td>
</tr>
<tr>
<td>Manica</td>
<td>4,926</td>
<td>4,926</td>
<td>560 (11.4%)</td>
<td>560</td>
</tr>
<tr>
<td>Inhambane</td>
<td>144</td>
<td>144</td>
<td>9 (6.3%)</td>
<td>9</td>
</tr>
<tr>
<td>Gaza</td>
<td>209</td>
<td>209</td>
<td>20 (9.6%)</td>
<td>20</td>
</tr>
<tr>
<td>Maputo Province</td>
<td>902</td>
<td>902</td>
<td>242 (26.8%)</td>
<td>242</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8,526</td>
<td>8,526</td>
<td>1,060 (12.4%)</td>
<td>1,060</td>
</tr>
</tbody>
</table>

Source: ADPP and DPS –Gaza quarterly reports, 2019
Strengthening TB screening in healthcare workers and facility-based infection control

The screening of TB in health workers and strengthening the control of TB transmission in Health facilities are priority interventions by NTP. In this context, the approach supported by the SATBHSSP, consisted of strengthening the capacity of workers to implement measures for infection control, reproduction and distribution of IEC material, advocacy with Province Health Directorates to improve infrastructure and reinforce the availability of personal protective equipment, and supervision and technical support visits.

Key results

At the level of the priority provinces, 10,024 were screened (corresponding to 63% of the total health workers screened in the country). Of these, 212 (1.3%) were diagnosed with TB (all forms) and 2 (0.9%) with MDR-TB.

Table 4. Summary of TB screening among healthcare workers

<table>
<thead>
<tr>
<th>Province</th>
<th># HCWs screened</th>
<th># HCWs screened</th>
<th># TB cases AF</th>
<th># Cases MDR</th>
<th># Bacteriologically confirmed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabo Delgado</td>
<td>2,355</td>
<td>777</td>
<td>13</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Gaza*</td>
<td>2,159</td>
<td>320</td>
<td>21</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Inhambane*</td>
<td>2,434</td>
<td>1,924</td>
<td>9</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Manica*</td>
<td>2,217</td>
<td>1,218</td>
<td>22</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Maputo cidade</td>
<td>3,313</td>
<td>2,203</td>
<td>45</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td><strong>Maputo provincial</strong></td>
<td>2,841</td>
<td>2,276</td>
<td>28</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Nampula</td>
<td>4,785</td>
<td>3,099</td>
<td>23</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Niassa</td>
<td>2,009</td>
<td>7,554</td>
<td>22</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Sofala</td>
<td>3,279</td>
<td>1,529</td>
<td>72</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>Tete*</td>
<td>2,196</td>
<td>1,372</td>
<td>23</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Zambezia*</td>
<td>4,044</td>
<td>2,914</td>
<td>109</td>
<td>1</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>31,632</td>
<td>18,386</td>
<td>387</td>
<td>5</td>
<td>156</td>
</tr>
</tbody>
</table>

*SATBHSSP priority provinces
Source: 2019, NTP annual reports
Zambia

Enhancing TB case detection and treatment success
The Southern Africa Tuberculosis and Health Systems Support (SATBHSS) Project is supporting the TB response in Zambia with a focus on interventions outlined in the National TB Strategic Plan (2017-2021) hence the project is contributing to the goal of eliminating TB in Zambia by 2030. The interventions took into cognisance that over 25,000 undiagnosed and untreated TB patients which are missed annually are the main sources of TB infection. The project thus prioritised interventions which focused on creating demand and making services available to enhance early case detection and treatment to improve quality of life and reduce deaths. The following is a highlight of the progress made during the 2019 activity implementation period.

Innovative TB case detection
During the reporting period, a total of 25,146 TB clients were notified against a target figure of 27,727. A detailed analysis of the data coupled with recommendations from the National Prevalence survey and other reports indicated that the program was missing significant number of cases mainly through under diagnosis or under reporting. The assertion presented above was further supported by the findings of a national Data Quality Audit (DQA) conducted by the National TB and Leprosy Program (NTLP) in the third quarter of the reporting period. The results of the audit affirmed that there is significant under-reporting and under-notification across the 10 provinces of Zambia. The report shows that the level of underreporting and under notifications is at 17% and 33%, respectively. The magnitude of under reporting is relatively comparable to the findings in inventory studies done in the region, i.e. Malawi, South Africa and Kenya, of which the rage was between 18 to 38% (NTLD, 2015). Under the SATBHSS project, the following strategies were implemented to create demand in the general population for them to access available quality TB services.

Raising awareness about TB to create demand
The NTLP embarked on a number of activities to raise awareness in order to create demand for TB services and advertently alleviate the stigma. The programme optimized the World TB Day commemoration and undertook different demand creation activities. Among them was the dissemination of TB messages to the general population through the use of print and electronic media (such as television, radio and local newspapers), community drama, door-to-door campaigns by community volunteers and distribution of Information Education and Communication (IEC) materials including electronic and static billboards. In addition, social and behaviour change communication orientations were conducted for community volunteers, ex-miners and healthcare workers in the project districts. A total of 56 media personnel was empowered with information through two orientation workshops on TB and occupational lung diseases held in Lusaka and Copperbelt provinces during the first quarter of 2019. These strategies have played significant roles in facilitating the dissemination of TB information across the country. A number of articles on TB were published in the print media. In addition, a total of 5,500 IEC materials were printed and distributed to all the provinces.

Mobile phone text messaging, using the short messaging service (SMS)
Awareness messages were also sent through short message system (SMS) on the two leading mobile networks in the country during the World TB Day commemoration. One of the well-received messages read, “Did you know that TB is curable? Go for TB testing at the nearest health facility today. TB testing and treatment is free and available. Kick out TB”. An estimated
three million people were reached with these messages. Feedback from the community at different health facilities indicated that the SMS were well received as more clients visited the facilities as a result.

**Community engagement and involvement**

In order to scale up TB case detection and contribute towards successful treatment outcomes, the project also prioritized community engagement and involvement through different approaches. To this effect, over 7,000 community-based volunteers were identified, oriented and empowered to conduct community sensitisation for demand creation, contact tracing, identification of presumptive TB cases and refer them for further investigation at health facilities through the RBF program. This was seen to be an effective way of increasing the knowledge of community volunteers on the local TB situation and in turn enhance their capacities to screen and refer more presumptive cases for further investigation. Therefore, in order to strengthen engagement of Neighbourhood Health Committees (NHC) for community based TB detection and improve quality of TB indicators at facility levels, the project trained 383 Health Facility In-Charges, 212 TB Focal Point Persons and 7,766 Community-based Healthcare Workers (HCW) through the RBF approach from the 19 project districts.

**Intensified TB case finding and active TB case finding**

During the reporting period, a total of 4,118 clients were detected through active case finding activities at correctional facilities, mining communities and among healthcare workers. The diagnosis provided that 2,358 were bacteriologically confirmed cases, whereas 1,760 were clinically diagnosed. These results were not as inspiring to the aspiration of the program as the efforts were negatively affected as most of the facilities reported having run out of GeneXpert cartridges and could, therefore, not perform GeneXpert tests on a good proportion of the samples collected during the ICF or ACF activities. The situation was made worse because of increased load shedding thereby crippling the optimal utilisation of GeneXpert machines.

Moreover, all presumptive and TB patients were offered HIV testing as per national guidelines. Those who tested HIV positive were immediately offered anti-retroviral therapy. Several related activities were conducted to finding the missing TB cases in the 19 project districts. These activities involved setting up a triage mechanism in all departments of health facilities (out-patient departments, maternal and child health units, and anti-retroviral therapy clinics). TB screening was offered to all clients and patients seeking health care for any reason.
At the same time, presumptive TB patients were referred for TB test and further investigations using a fast-tracked patient flow. Before the implementation of these activities clinicians and community volunteers were oriented in TB screening during quarter one and two of the current reporting period. Awareness activities were conducted at community level as highlighted above. In the community, TB screening campaigns were conducted in the TB hotspots in the project districts, using community volunteers and HCW from health facility in the catchment area. TB screening was a symptom based, and samples were collected in identified sputum points and couriered to the health facilities. Results of the TB tests were available to patients within 24-48 hours depending on the distance between the community and a TB diagnostic facility.

**Public-private mix (PPM)**

Under this project, NTP has been able to conduct a number of activities in the area of public-private mix. The engagements this far included orientation of the private sector, such as, private health practitioners, pharmacies, traditional healers and traditional leaders. About 180 private practitioners were oriented in TB and provided with the latest guidelines on TB management to standardise screening, referral, diagnosis and reporting of TB. The training included healthcare workers from mine owned hospitals in Kabwe, Kitwe, Chingola and Chililabombwe.

Still under PPM interventions, 156 Members of Parliament were engaged on TB in a workshop was conducted to advocate for their engagement in increasing resource allocation to the TB programme. The meeting was aimed at influencing their active participation in TB awareness in their constituencies. There was immediate buy-in from the MPs who requested for cascading of such engagements to district and sub-district levels.

**Challenges in case detection**

There has been progress in TB control. Some challenges have also been identified and need to be addressed in the way forward. Stigma towards TB is still an issue of concern. On a study conducted by the MoH (TDRC) in collaboration with the CDC revealed that 76% of miners are not willing to disclose their TB status to their employers, and 24% in the study would not disclose their TB status to their supervisors, inversely, 24% of the study participants said they would not share their TB status with their spouses or partners. This is a source of concern as miners are afraid to share their status for fear of loss of employment. This is attributable to the current legislation governing TB in the mines which is under review.

Some of the private health facilities do not report TB cases to the National TB program as evidenced through the project baseline. This could account for some of the missing TB patients. Low index of suspicion among frontline healthcare workers is a key contributing factor to low case detection, together with limited number of healthcare workers with skill set to diagnose extra-pulmonary TB.

Over 429 MDR/RR patients have been mapped countrywide, out of an existing 633 at the time of reporting. Lusaka, Copperbelt, Western and Central provinces accounted for the highest number of MDR TB patients mapped. The geospatial mapping enabled the project to pinpoint the TB hotspots in selected communities, which were identified with high risk groups as a strategy to find the missing TB cases.
Observed gaps in TB case detection

Despite early gains in TB case detection, there are some gaps. The X-ray survey done by the MoH showed that 15.5% of the 2,955 health facilities ranging from first, second and tertiary level do not have functional radiography (chest x-ray) which is an essential sensitive diagnostic tool. However, this survey only considered facilities with existing chest x-ray machines. Countrywide, there are only 40% of health facilities with TB microscopy coupled with knowledge gap in diagnosis of extra-pulmonary TB and childhood TB. Inadequate expertise in reading of chest x-rays; inadequate funding and health personnel to support TB screening in key populations such as inmates and refugees; and inadequate tools for diagnosis of Childhood TB, such as sputum induction machines. Other gaps include inadequate skills to undertake Childhood TB diagnosis such as gastric lavage.

Currently, there are only three laboratory facilities with capacity to conduct DST and culture, and two of these are in one province. This implies that there is limited geographical coverage for DR-TB surveillance. Facilities in the peripheries have challenges in accessing GeneXpert and molecular diagnosis due to gaps in the sample courier system.

The SATBHSS project provided nutritional and transport support for 627 MDR-TB patients. Early gains are that patients who were lost to follow-up have been brought back on treatment. Similarly, the health condition of patients has notably improved since initiation of the support. Similarly, all DR-TB patients and their families receive psychosocial counselling treatment adherence. As a result of the abovementioned interventions, there has been a perceived positive change in treatment outcomes for both susceptible and drug resistant TB.

2.1.2 Sub-component 1.2: Rolling a Standardised Package of Occupational Health Services and Mining Safety Standards Across the Four Countries

Regionally

The AUDA-NEPAD supported project countries to (i) strengthen the capacity of public sector agencies in mine health and safety inspection; and (ii) initiate the roll out occupational health services database and electronic record systems. In this regard, inspectors were trained focusing on dust management. Occupational hygiene experts were also trained with the view to improve occupational hygiene practices in the project countries. The trained experts were also provided with guiding documents for conducting mine inspection and ensuring compliance with the view to improve the quality of inspections. Zambia and Lesotho were supported to develop guidance documents for the rolling out of occupational health services database and electronic record systems. This activity was implemented in collaboration with the National Institute for Occupation Health (NIOH) of South Africa which will provide technical support in the adaptation and implementation of Occupational Health and Safety Information System (OHASIS).

Country level

Lesotho

Rolling out occupational health services

The Occupational health and safety specialist to assist the Ministry of Health to strengthen the occupational health services was recruited. The specialist is also working with Ministry of Mining and Ministry of Labour and Employment in coordination of activities supported under the project. Furthermore 10 hospitals have started providing health and wellness services. Equipment was also procured and delivered for these wellness centres.
Compensation for migrant miners

This intervention is implemented by Ex-Miners Tharollo Joint Venture. The main objective of the intervention is to track and trace ex-miners, miners and their dependents in three northern districts of Lesotho namely Berea, Leribe and Bothe-Bothe. The aim is to find TB and silicosis sufferers among them, develop a national database that will be used on the ongoing fight against TB and other related respiratory diseases. Clients found eligible for compensation will be assisted. The NGO engaged started operating from June 2019. Activities implemented on first month included consultations of relevant stakeholders in order to refine implementation arrangements. By the end of 2019 TB screening among ex-miners at community level was ongoing and about 3,500 clients were included in the database for routine screening of occupational lung diseases.

This intervention is implemented in collaboration with various stakeholders such as Ministry of Health, Ministry of Labour, TEBA, MBOD, PIH and local leadership structures such as chiefs and councillors. The project will run for 18 months from June 2019 to November 2020.

Malawi

Inspection of mines helps in enforcing the Occupational Safety, Health and Welfare Act (OSHWA) (1997) and the Mines and Minerals Act (1981) - Mine (Safety) Regulations. The visits enable government authorities assess the level of compliance of mines to occupational health and safety obligations under the Explosives Act, the Mine (Safety) Regulations and the Occupational Safety, Health and Welfare Act and regulations; assess the appropriateness and make improvements on the inspection tools that had been developed in collaboration between Ministry of Health, Ministry of Labour and Department of Mines; assess the level of understanding on Tuberculosis and other occupational diseases and study how there are being managed in terms of factors that increase risk to miners (such as dust), screening, treatment and compensation of workers.

During the period under review three rounds of inspection were carried out in 40 different mines across the country. The mines inspected included mechanised, semi-mechanised and artisanal mines. In terms of scale, they included large, medium and small scale. The visits also targeted unlicensed operations.

Out of the 40 mines inspected, 31 were large scale and the remaining 9 were artisanal and small-scale mines.
The inspections have helped in raising awareness levels in terms of safety and health including occupational lung diseases among artisanal miners. However, large scale mines seem to have challenges in implementing recommendations provided by the inspectors. It is anticipated that the revision of mining safety regulations will be helpful in addressing some of the problems that are continuously encountered at some of the large-scale mining sites. For example, the issue of inadequate safety provisions for contractors or temporary workers continues to be noted despite continued reminders for rectifying the anomaly.

Mozambique

Implementation of safety standards in the mining sector
As part of the efforts to achieve good international practice in the context of health inspection in mines, including dust level monitoring and control, the project funded the purchase of equipment; OHS inspections in the mining sector and training of human resources.

Key results and achievement
Increased capacity to conduct mine health inspections
- The coverage of registered mine companies that were inspected twice a year has increased from 9% in 2018 to 43% in 2019;
- Various parameters were measured using equipment acquired by the project (dust, vibrations, noise, gases, air velocity, oxygen, radioactivity and humidity);
- The number of companies complying with the regulatory standards doubled in 2019;
- 50 recommendations were issued to companies and 10 penalties were applied.

Figure 2. Mineral resources inspectors using the recent acquired equipment
Lessons learned

• The maintenance quality of GeneXpert devices is a determinant of the ability to track
• Cost-effective and reliable SS transportation system is likely to increase TB detection rate
• Mentorship programmes are likely to improve health facilities infection control standards. Scale up is recommended

Way forward

• Strengthen case detection in key populations (HCW; Prisoners; and missing cases among ex-miners) through innovative approaches: Video-DOT; Mobile Clinic (re-utilisation of TB prevalence survey trucks)
• Improve MR-TB treatment success rate through introduction of 100% short-regimen treatment
• Strengthen cross-border TB management, continuum of care and referrals (regional toolkit for cross-border TB management)

Zambia

The three main activities funded under this subcomponent include: (i) strengthening the capacity of public sector agencies responsible for mine safety to undertake inspection of mines with an emphasis on determining mine dust levels; (ii) expanding periodic screening and referral for occupational lung diseases and other diseases in line with standards set within the sub-region and international best practices; and (iii) developing/strengthening care programs for occupational lung diseases. The project is currently providing a comprehensive package of occupational health services through OHSI, MSD, OHSD and health facilities using a multi-sectoral approach.

Conduct environmental monitoring in mines, quarry areas and related industries

Inspection of mines is a function of the Mines Safety Department under the Ministry of Mines and Minerals Development. Under the SATBHSS Project, inspectors from both MLSS and OHSI have been co-opted into the MSD inspectorate team. The main essence of undertaking the inspections include prevention of the production of inhalable dust at source, prevention of hazards at workplaces and conduct of mining activities to prevent exposure. The other reasons include raising awareness on workplace safety, health and environmental protection while enforcing compliance with OSH laws in mining and related operations.
In regard to project implementation, the Mines Inspectorate key performance indicators include counting the number of mines inspected at least twice in a year and checking those that remain compliant with national laws and regulations. To that end, MSD uses the first inspections to identify non-compliances in the workplaces, issue appropriate directives to ensure compliance. In addition to identifying new non-compliances, the second inspection visit is also used to check compliance to all directives issued in the first inspection visit using the Actionable Issues Tool.

**Key results achieved**

As a result of inspections with support from the SATBHSS Project, Chambishi Copper Smelter procured state of the art dust suppression equipment which is able to suppress dust particulate of PM2.5. The equipment has already been installed in identified dust prone environments. In addition, frequent and detailed inspections have resulted in some small-scale operations such as stone quarries to install automatic sprinklers at most raw material transfer points. Furthermore, United quarries limited employed a permanent driver for their water bowser in order to improve their dedication to suppressing dust around the plant. Operatives such as Luanshya copper mine have procured mobile water bowserS for dust suppression along haul roads. Legal appointments were carried out to place personnel directly responsible for specific operations and this has enhanced implementation of directives issued by inspectorate. Small-scale operations as well as corporative societies were educated on the importance of using dust respirators and ultimately the need for them to procure for themselves.

Unlike in 2018, the department has extended its coverage and identified a total of 264 active mining companies across the country of which 80.29% were inspected once and 72% visited at least twice at the time of reporting. The number of mines that MSD used to inspect prior to the start of the project were an average of 35 in a year compared to 161 in 2018, demonstrating a remarkable improvement attributable to the project.

Over time, the implementation of the project under MSD has led to learning of key lessons and best practices. Collaborative programmes have led to improvement in efficiency of the implementing agencies in terms of carrying out their mandates in management of occupational safety and health. This collaborative approach has helped in easing the transport and dust sampling equipment problem.

**Screening for occupational diseases**

Tuberculosis and silicosis in mineworkers have been classified as occupational lung diseases (Workers Compensations Act No.10 of 1999). The OHSI is mandated by the Workers’ Compensation Act No. 10 of 1999 to carry out medical examinations of all prospective, current, and former miners in Zambia by administering initial, periodic (annual), discharge, and post-career medical examinations of miners, and is charged with analysing and reporting surveillance data on occupational lung diseases in the mining sector. For the period under review, OHSI screened a total of 76,058 miners and ex-miners, and so far, 272 miners and ex-miners have been certified and 76% are receiving compensation out of which 16 were diagnosed with PTB while 27 were certified with Pneumoconiosis.
2.2. Regional Capacity for Disease Surveillance, Diagnostics, and Management of TB and Occupational Lung Diseases

2.2.1. Sub-component 2.1: Improving Quality and Availability of Human Resources in the Target Areas

A. Training and human resource development

As part of continued local capacity building, ECSA-HC supported several training and capacity building support to enhance country’s capacity to implement the major activities within the countries in order to achieve the set goals in various aspects. The training activities prioritised and carried out in year three were as following, in which a total of 455 participants have been trained so far (cumulatively) at regional level. About 1,357 trainees were trained in the following areas covering all the countries in most of the training (certification as African Society for Laboratory Medicine – ASLM Step Wise Laboratory Quality Improvement Process Toward Accreditation (SLIPTA) auditors, Laboratory Quality Management System (LQMS) Mentors, LQMS and ISO Standards, Second Drug Sensitivity Testing (DST) using Line Probe Assay (LPA) Threats Hazards Identification and Risk Assessment (THIRA); Laboratory based surveillance, Event-based Surveillance (EBS), infection control and healthcare workers screening).

The project contributed immensely to capacity-building in the field of OHS in the four participating countries. Inspectors, doctors, nurses and occupational hygiene professionals were trained. AUDA-NEPAD played a key role in this initiative that saw nine inspectors being trained in the use of respirable airborne gravimetric sampling equipment. A further 60 inspectors were trained in an in-country OHS inspectors’ training programme in Mozambique and Malawi. They acquired skills regarding the basic principles of inspections and risk assessment.

22 occupational hygiene professionals were trained on the measurement of hazardous chemical substances, including risk assessment. After the training, participants sat for an international exam administered by the British Occupational Hygiene Society (BOHS) under the International Occupational Hygiene Association (IOHA); 60% of participants passed the exam.

24 medical doctors and occupational health nurses were trained on basic occupational health principles, with a focus on medical surveillance and compensation. The training was organised to facilitate capacity development in occupational health skills in medical surveillance and compensation principles for miners and ex-miners. The training was done in collaboration with the Compensation Commissioner for Occupational Diseases (CCOD), under the South African Medical Bureau for Occupational Diseases (MBOD).

Julie Hills, Dr Moyo, Carol Mthethwa, Norman Khoza and Mr Mokone with OHS Inspectors in Mponela, Malawi
2.2.2. Sub-component 2.2: Strengthening diagnostic capacity and disease surveillance

A. Global health security/disease surveillance, preparedness and response

As part of strengthening cross-border surveillance and emergency preparedness and response, the project supported and/or provided technical assistance in a number of areas to ensure enhanced capacity of preparedness and response. (i) Cross-border disease surveillance and response - To date, the project has established 12 of the 26 identified cross-border zones between the 4 project countries and their neighbours that are not in the SATBSS project of South Africa, DRC, Tanzania and Zimbabwe. The innovation of cross-border zoning and establishment of committees has provided a platform for enhanced cross-border collaboration between districts of neighbouring countries through establishment of formal and informal communication channels, implementation of joint work plans and joint outbreak investigations among others; (ii) capacity enhancement on preparedness and response. ECSA-HC has conducted capacity building of zonal members through trainings like Threats and Hazards Identification and Risk Assessment (THIRA), donning and doffing and table top simulations and inspections of port health and Ebola Treatment Units; (iii) Simulation exercises: following the declaration of the DRC Ebola outbreak as a threat of international concern, countries have enhanced their preparedness. To test the level of preparedness, ECSA-HC supported the planning, execution and after-action review of Field Simulation Exercise in Lesotho and Malawi where detailed action plans were developed from the observations and recommendations. Five table-top simulation exercises were conducted using the cross-border zone platform to test emergency preparedness and response plans based on the various risks for various diseases including Ebola, Cholera, Rabies, Listeriosis and countries like Zambia and Malawi utilized some of the findings to revise their preparedness plans. This also assisted to improve inter-agency collaborations in preparedness and response.

B. Laboratory systems improvement

ECSA-HC contributed to building capacity of project countries to implement laboratory system strengthening and quality management systems towards accreditation through training and certification of the remaining six laboratorians (cumulative total of 20 since 2017) as ASLM SLIPTA certified auditors. The project has increasingly started utilising these project trained assessors for its annual peer SLIPTA audits. To date, all 13 laboratories from the 4 project countries have attained the project target of two stars. Two of the project laboratories from Zambia have attained ISO 15189 Accreditation with five more earmarked for accreditation in 2020. In addition, ECSA-HC provided technical assistance in development of structured mentorship guidelines for Malawi and an accreditation roadmap for Lesotho. Support was provided to the countries to implement laboratory-based disease surveillance to increase the capacity for early detection. Zambia was supported to roll out second line DST using line Probe Assays (LPA). The project also supported the National TB Reference Laboratory – Mozambique process of attaining Supra Reference Laboratory (SRL) status, which will strengthen its capacity to support the TB network in Mozambique and the region (including Lusophone countries).
Lesotho

**Strengthening diagnostic capacity and disease surveillance**

Cross border zonal disease surveillance and response interventions in line with one health approach.

Under the SATBHSS workplan two joint cross boarder meetings between Lesotho and RSA were held on the fourth quarter of 2019. Furthermore, a number of outbreaks were reported and investigated accordingly.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>ACHIEVEMENT IN 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervision at points of entry (POE)</td>
<td>Eight (8) PoEs of the nine designated were supervised, gaps identified, and recommendations made. Some challenges of data entry were addressed. <strong>Points of Entry (PoE) assessment</strong> Each designated PoE is subjected to the Assessment tool for core capacity requirements at designated airports, ports and ground crossings. The format of this tool follows the list of core capacity requirements described in Annex 1 of the IHR 2005. It further describes and identifies measures of compliance for each requirement and provides space for assessing the stage of implementation of the core capacity requirements along with the description of existing capacities and for planning how to strengthen, develop and maintain these core capacities.</td>
</tr>
</tbody>
</table>

There are nine designated PoE in Lesotho eight ground crossing and one international airport.

The overall objective Assessment was to evaluate the core capacities requirements at designated points of entry related to prevention, early warning and response for public health risks and events as outlined in annex one of the WHO IHR 2005 document.

The specific objectives were as follows:
- To acquire baseline information that will inform progress towards planning and monitoring of IHR implementation
- To establish the current status of existing core capacities at point of entry
- To identify gaps and other requirements for the implementation of the IHR 2005 at points of entry
- To determine existing core capacities and capacity needs at points if entry.

The assessment report will be shared before end of February 2020.
CROSS BORDER COLLABORATION MEETINGS

Maseru and Ladybrand; Zaztron_Wepner and Mohales’Hoek_Mafeteng CBC: Five days’ workshop was held for the two zones. First two days were dedicated to THIRA training.

THE EBOLA OUTBREAK SIMULATION EXERCISE (SIMEX) IN LESOTHO

The Ebola outbreak in Democratic Republic of Congo (DRC) was declared by World Health Organization (WHO) as a public health emergency of international concern on 1st August 2018. As of 10th November 2019, DRC had registered 3,287 cases with 3,169 and 118 as confirmed and probable cases respectively. Of these cases, 2,193 dies (case fatality rate 67%) and 163 (5%) of them were health workers (163).

With all these preparedness measures in place, there was express need for the Government of the Kingdom of Lesotho to test their level of preparedness and determine effectiveness of the measures that had been put in place.

Rationale for conducting field simulation exercise

The WHO require that member states implement the “Five mandatory functions” as part of the monitoring framework for the implementation of IHR in which member countries are expected to improve their capacities in events surveillance, prevention and response. These functions, among others, include conducting (i) conducting the Joint External Evaluation (JEE), (ii) simulation exercises annually, (iii) After Action Review (AAR) after every declared outbreak and producing a State Party Annual Report. Lesotho had its first ever JEE in July 2017 in which the IHR core capacities were assessed to determine the level of implementation. Joint External Evaluation is a voluntarily process coordinated by WHO and is intended to assess country capacity to prevent, detect, and rapidly respond to public health threats. One of the findings was absence of a multi-hazard emergency preparedness and response plan following which requires to be tested.

To measure its preparedness, Ministry of Health Lesotho, through its office of IHR Office has been conducting other activities which include inspections of port health, support and monitoring visits and conducting table-top simulations during cross-border meetings. Although these initiatives provided the government with information on status of preparedness plans, it did not provide a good test for preparedness, if a real Ebola case was experienced hence the need for SIMEX.

SIMEX attracted the global attention as all media houses focussed to Lesotho. Additionally, the ability of the health system to cope was also assessed or tested.
### Regional 2019 Annual Report

#### Other activities conducted IHR

**Surveillance and outbreak response**

<table>
<thead>
<tr>
<th>Reported suspected outbreaks</th>
<th>Action taken</th>
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</thead>
<tbody>
<tr>
<td><strong>Anthrax</strong></td>
<td>• Maseru District: In May 2019 at Ha Tseka in the catchment area of Mazenod, there was animal anthrax and of the 77 people investigated, only six of them presented with signs and symptoms which fit the cases definition. Only three people who came in contact with the meat reported to the health facility. No human deaths were recorded.</td>
</tr>
<tr>
<td><strong>Food poisoning</strong></td>
<td>• Qacha’s Nek: One 16-year old boy died after eating a cow which died on its own while 66 other people were treated after they Rapid Response Team was ferried to the Lebakeng area with the LDF helicopter.</td>
</tr>
<tr>
<td><strong>Measles</strong></td>
<td>• Four cases of measles were confirmed and one rubella from the 51 samples taken from the Lebakeng Health Centre in October 2019. Annex 2 of the IHR was followed and a report to WHO was done. Social mobilisation followed by investigation and mass vaccination of the affected place and two more adjacent villages was done and 500 children were vaccinated.</td>
</tr>
<tr>
<td><strong>Bloody diarrhoea (Shigellosis)</strong></td>
<td>• Two more cases were confirmed from Berea (Mabote Health Centre – 2-year old child) and Leribe (SDA Health centre – 32yrs woman) in November 2019 Following the ongoing measles investigation, which began at Ha Letete Village at Qacha’s Nek, the Berea District Health Management Team alluded the investigation team of possible cases of measles, which were seen at Berea Hospital in September 2019. This information was important because one of the confirmed measles cases seen at Ha Letete had a travelling history to Teyateyaneng, Berea during the same period. The patients were reported to have been primary school children from one of the boarding schools in the district, who were brought at the same time by a teacher. The estimated number of the children was around ten (10)</td>
</tr>
<tr>
<td><strong>Suspected cases of Scabies</strong></td>
<td>• 30% of the village was affected by a rash similar to scabies at Qabane Village in Mohale’sHoek , further investigation to be carried out.</td>
</tr>
<tr>
<td><strong>Confirmed meningococcal meningitis</strong></td>
<td>• A confirmed case of Meningococcal meningitis was reported by Maseru DHMT on the 16th December 2019, a two months female (2/12) of ha Thetsane died at Mamohato Memorial Hospital on the 18th December 2019. Further investigation for contact tracings were done and intervention to stop the spread of the disease carried out.</td>
</tr>
</tbody>
</table>
Laboratory systems strengthening

Three (3) laboratories underwent through bi-annual audit SLIPTA process. The three (3) labs were National TB Reference Laboratory, Motebang Regional Hospital Laboratory Mafeteng Regional Hospital Laboratory. Keys findings showed that there was commitment and Management Support from MOH, Hospital Management and Laboratory Managers and their staff and other MoH Partners. Training of key personnel in Quality Management System and technical areas was done. There was also availability of testing platforms for service provision, structured facility-based Laboratory mentorship support and a functional Laboratory Information System.

Recognition is provided using a five-star tiered approach, based on a bi-annual on-site audit of laboratory operating procedures, practices, and performance. The audit checklist score corresponds to the number of stars awarded to a laboratory in the following manner shown below. As shown below all the three labs attained 4 stars rating.
Areas of improvement identified included human resource capacity, especially staffing to match scope of testing, it was also found that there was inconsistent supply of reagents and consumables, certification of serviced equipment and training/competency records of service technicians.

Based on the areas of improvement identified the following recommendations were made; MOH/Partners to jointly develop and follow up a plan of action to address the gaps from the audits, National Plan monitored by Lab Directorate. Laboratory Plans that will inform the ongoing structured mentorship were to be developed, setting a target within 12-18 months for Mafeteng, Motebang and NTRL Accreditation with tangible milestones in-between, development of an accreditation roadmap monitored by Lab Directorate and conduct quarterly reviews of the roadmap.

Upgrade/renovation of the National TB Reference Laboratory (NTRL)

The Southern Africa Tuberculosis Health System Support project in Lesotho (SATBHSS) supported four (4) infrastructure development activities namely, rehabilitation and upgrading of the National TB reference laboratory (NTRL), provision of the Park Home clinics converted shipping containers for five Port Health clinics.

On the National TB reference laboratory (NTRL), the work was carried out within budget and given time, the contractor has handed over the Laboratory to the client after the certification of negative air pressure by specialists. Certificate of Final completion was issued to the contractor on June 2019 and the final payment certificated was issued on the same month. Furthermore, Chemical store at NTRL in preparation for accreditation was completed in the last quarter of 2019. Procurement of biosafety cabinets for National TB reference lab (NTRL) upgrading negative air pressure and changing the mechanical system for infection control has commenced and will be completed in February 2020. As part of strengthening the efficiency of laboratory services in Lesotho, an electronic system called GXalert was installed throughout the 27-laboratory network. This electronic system will remotely monitor the use and functionality of GeneXpert machines installed in the 27 laboratories.
Refurbishment of Motebang hospital laboratory to create space for TB diagnosis commenced in the last quarter of 2019 and will be completed in May 2020.

Four (4) port health clinics namely Maseru, Mafeteng, Maputsoe and Qacha’sneek were completed and handed over to the client. The only outstanding facility is Mohale’s hoek. Processes were already at the advanced stage on recruitment of staff to work at these facilities. It is anticipated that by January 2020 the facilities will be providing health services.

Procurement of mobilex-rays for community TB care-centre of excellence

The procurement of mobile digital x-rays was made during this reporting period. The x-ray is used in the two districts where implementation of Community TB care interventions is taking place. The two districts are Leribe and Berea. Services provided at the X-ray will include screening for TB and other chronic lung diseases as well as HTS services.

Strengthening mine health regulation

Strengthened mine health regulations through legislative reviews and implementation of mine health standards

OSH act development process was initiated at the end of last quarter of 2018. During the consultations with various stakeholders it was agreed that an OSH policy be developed before the development of the act. The consultant was engaged in early 2019 to develop the OSH policy. The draft final document of the policy was approved by the stakeholders and is yet to be presented for approval by cabinet.

Mine health regulation compliance

Routine inspection to mining operations is an important intervention carried by the regulators such as Mining, Ministry of Labour and other bodies. The objectives of the inspections are to address the following; to monitor compliance to Occupational health and safety standards, regulations and international standards. e.g. Lesotho Labour code, Public Health Order, 1970, Mine and Safety Act 1981, to ensure that Occupational health and safety management and controls take into consideration the entire work processes, to ensure that each and every mine operation has implemented the basic Occupational health and Safety systems in its operations.

Schedule for routine inspections to mines by the team from Ministry of Mining, Labour and Health has been executed accordingly. As a result, the revised schedule covering the 3rd and 4th quarter were developed. All the 12 operating mines were visited in the last six months of 2019. Six of the 12 mines were visited twice. This was a good performance when compared with the previous year in which only one mine was visited twice while the rest were visited once. The presence of the occupational and Safety Specialist has provided more capacity both the Ministry of Mining and Ministry of Labour in executing routine inspections to the mines.

During the drafting of the OSH policy it was decided (in consultations with stakeholders) that there will only be one OSH Law regulating all industries in Lesotho, with Mining and other sectors developing industry specific regulations. Ministry of Mining is currently finalising topics to be included in the regulations as well as develop the regulations which will be known as the Mining Regulations. The Government of Lesotho has adapted the regional mine inspection guidelines developed by AUDA-NEPAD, piloted and further refined their in-country guidelines. They further
requested AUDA-NEPAD to develop a regional compliance tool to measure the inspection activities progress and whether they are achieving the intended goal. Currently, AUDA-NEPAD is working on developing the occupational exposure limits and medical surveillance guidelines as recommended by the regional baseline study, MTR and the CoP of OHS.

**Information management system for mining regulation compliance monitoring and mine health surveillance**

During the knowledge Exchange visit in South Africa, National Institute of Occupational Health presented the Occupational Health and Safety information system. All the Ministries were interested in the system as it includes most of the components already collected by various ministries such as accident and incidents reporting, inspection module and TB self-screening module.

A meeting was held in October under the support of AUDA-NEPAD to explore the feasibility of using the system by both Ministry of Labour and Ministry of Mining. Currently arrangements are ongoing in relation to the procurement of hardware and the basic software in order to implement it. Both Ministry of Mining and Ministry of Labour had shown interest to use the system.

**Malawi**

**Support IDSR activities at all levels (outbreaks)**

The activities under this broad area centred on the support the Project provided to three districts, Nsanje, Chikhwawa and Mulanje that were affected by cyclone Idai. The Project supported procurement of assorted medical supplies and drugs; provision of integrated outreach support services for treatment, public health education/promotion services; and laboratory supplies for outbreak response.

Apart from supporting cyclone Idai initiatives, the Project also worked with some districts including Lilongwe on cholera preparedness activities.

**Support cross-border IDSR activities**

The Project supported three cross-border country meetings, two of these were between Malawi and Mozambique and another one between Malawi and Zambia. These meetings were held in a bid to help in strengthening health systems and enhancing cross-country collaboration on a number of health issues, including TB control, laboratory strengthening and networking, and disease surveillance and outbreak preparedness between the countries.

The meeting between Malawi and Zambia involved Mzimba North and Chama districts. Whereas the meeting between Malawi and Mozambique involved Salima, Zomba, Machinga, Mangochi Likoma, Lago, Chimbunila, Lichinga, Mecanhelas, Mandimba and Ngauma.

Figure 5: Malawi & Mozambique participants at a cross-border meeting in Lago, Mozambique
The meetings enabled the countries to:

i. institute and step up multi-sectoral collaborations utilising the One Health approach in their response to the emergency;

ii. step up risk communication using all channels. The populations need information on how to avoid epidemic diseases e.g. cholera, and how to deal with situations when outbreaks occur;

iii. Strengthen IDSR by training more staff, improving procurement of needed materials and availing more financial resources;

iv. Explore utilization of digital systems for data collection and transmission;

**Installation of viewer stations for the digital x-rays.**

The Project managed to support the installation of 60 viewing stations in four facilities out of the six that were supported with digital x-rays. The facilities where the viewing stations were installed include Mzuzu Central Hospital, Mzimba District Hospital, Bwaila Hospital and Queen Elizabeth Central Hospital. Also installed were four servers, one per each facility to support easy management of and storage of images. To facilitate easy transmission of images within the facilities, the Project also supported the installation and setting up of local area network. With this undertaking, it is envisaged that the facilities will be able to capture, transmit and interpret images in a faster and systematic way.

**Develop workers compensation regulations**

The Project through the Ministry of Labour supported two meetings that were aimed at coming up with draft workers compensation regulations. The coming up of these regulations will go a long way in ensuring that the government through the Ministry of Labour on one hand and companies and organisations on the other, have clear guidelines on issues related to compensations for workers in as far as occupational health diseases and injuries are concerned. A draft of the regulations has been produced and has been submitted to the Ministry of Justice for further processing.

**Ensure microscopy sites undergo quarterly external quality assurance**

The Project supported a team from the laboratory to undertake External quality assurance in all the 9 districts as one way of ensuring that the results recorded and reported from the laboratories are accurate and can be reproduced. The EQA enabled the diagnostic team to determine staffing levels, workload per facility, stock status for TB reagents and consumables, compliance to usage of quality controls, perform TB slide blinded re-checking and to check adherence to safety practices in the all the visited sites.

**Quality management review system**

The Project supported a Quality Management System (QMS) review workshop for four Government Hospital laboratories that are earmarked for accreditation. The four laboratories are; Mulanje District Hospital Laboratory, Kasungu District Hospital Laboratory, Mzuzu Central Hospital Laboratory, and Rumphi District Hospital Laboratory. Each facility was represented by a team comprising of three laboratory officers; Laboratory Manager; Quality Officer; and a mentor. A total of 15 participants and four facilitators were in attendance.

The aim of the meeting was to review the quality management systems in the 4 laboratories following an assessment by African Society of Laboratory Medicine (ASLM) in June 2019. The workshop enabled the participants to discuss corrective actions and drawing up a road map in readiness for accreditation.
**Strengthening laboratory management towards accreditation workshops**

The Project supported two workshops where 22 laboratory officers were oriented on SLMTA. Through these workshops a fresh pool of laboratory officers has been added to the pool that was oriented in 2018.

**Strengthening laboratory management towards accreditation (SLMTA) QIP supervision**

The Project supported supervision visits to the following 11 facilities: Mzuzu Central Hospital, Mzimba, Rumphi, Karonga, Kasungu, Bwaila, Kamuzu Central Hospital, Light House, Queen Elizabeth Central Hospital, Nsanje and Mulanje.

The visits enabled central level inspectors review the following agreed upon areas: competency assessment, Balanced score card, floor plan activity, turnaround times and rejection rates. The rate of implementation of these areas were reviewed and feedback provided.

**Mozambique**

**Expansion of TB diagnostic capacity**

In response to the need to expand the diagnostic capacity of TB at the national level, the PNCT has prioritized the expansion of GeneXpert coverage, access to TB diagnostics; and strengthening surveillance of MR-TB.

**Key results and achievements**

1. **Expanded GeneXpert network nationwide and across the priority areas**

   The acquisition and installation of TB diagnostic equipment (GeneXpert and LED Microscopes) contributed significantly to the increase in diagnostic capacity. In the last 12 months, through the Global Fund financing, 76 GeneXpert devices were added, totalling 184 devices in Mozambique.

   Among priority areas, the GeneXpert network has grown from 36 to 96 devices. The contribution of the SATBHSS project to the network is reflected as follows as detailed in the table below.

<table>
<thead>
<tr>
<th>Priority province</th>
<th>Contribution of SATBHSSP in the GeneXpert network (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maputo province</td>
<td>30,7</td>
</tr>
<tr>
<td>Gaza</td>
<td>23,8</td>
</tr>
<tr>
<td>Inhambane</td>
<td>21,4</td>
</tr>
<tr>
<td>Manica</td>
<td>23,1</td>
</tr>
<tr>
<td>Tete</td>
<td>25</td>
</tr>
<tr>
<td>Zambezia</td>
<td>8,7</td>
</tr>
</tbody>
</table>

*Table 6. Contribution of SATBHSSP in the Province in enhancing GeneXpert network*
2. **Expanded access to TB diagnostics**

- 23,184 TB tests were carried out using the GeneXpert devices provided by the SATBHSS project, corresponding to 20.7% of the total tests carried out in the target provinces;
- Of the total tests performed, 1,634 TB cases were diagnosed (15.23% of the total cases in the priority areas); of these, 90 were MR-TB, corresponding to 13% of the total number of diagnosed MR-TB cases.

<table>
<thead>
<tr>
<th></th>
<th>All Devices</th>
<th>GeneXpert</th>
<th>SATBHSSP contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td># tests processed</td>
<td>111,676</td>
<td>23,164</td>
<td>21%</td>
</tr>
<tr>
<td># TB patients diagnosed</td>
<td>10,731</td>
<td>1634</td>
<td>15%</td>
</tr>
<tr>
<td># MR-TB cases diagnosed</td>
<td>10,731</td>
<td>90</td>
<td>13%</td>
</tr>
</tbody>
</table>

*Table 7. Contribution of SATBHSSP in increase access to TB diagnostic means*

3. **Strengthened diagnostic and surveillance capacity for MR-TB**

As part of the support to TB reference laboratories to increase coverage and diagnostic quality, the SATBHSS project financed the following interventions:

- Rehabilitation of TB Reference Laboratories in Beira and Nampula. This activity is ongoing;
- Training of technicians in technologies to perform cultures and sensitivity tests as described in the previous section;
- Implementation of the SLMTA program to improve the quality of diagnostics and processes at Laboratories in Beira, Nampula and Machava.

**Strengthening the sample transport system**

In view of the need to strengthen the sample transport system, MISAU acquired and distributed 118 motorcycles with the respective thermal boxes.
I. Improving the quality of laboratory systems

Within the scope of strengthening the quality of the reference laboratories and support for accreditation, the Reference Laboratories of Nampula and Beira and the Hospital Geral da Machava are benefiting from the laboratory quality improvement programs for accreditation (Improvement Process of the Stepwise Laboratories of WHO for Accreditation - SLIPTA). The progress of this program is monitored based on a standard metric system from “0” (low-quality systems) to “5” (good quality systems). According to the latest SLIPTA regional assessment, Nampula progressed from three to four stars, and Machava from two to three stars. The Beira laboratory was excluded from this assessment as it is in the process of rehabilitation.

![Performance of Ref. Labs on WHO-AFRO SLIPTA audits (2017-2019)](image)

Figure 12. Performance of Reference Laboratories on WHO-AFRO SLIPTA audits, 2017-2019

III.1. Challenges

However, despite the progress observed, some challenges prevail, among them:

- Inconsistent supply of reagents and consumables;
- Shortage of immunisation for staff;
- Lack of equipment maintenance.

II. Strengthening the diagnostic capacity for occupational diseases

The SATBHSSP contributed to the reinforcement of the diagnostic capacity of occupational diseases through the acquisition of spirometers, audiometers and ECG devices. They were allocated to the Medical Examination Centres located in each of the target provinces. As a result of the capacity created, 2,597 miners and ex-miners were screened for occupational diseases, of which 14.4% were diagnosed with occupational lung diseases and ...% for other occupational diseases.
### Challenged

- There is a low uptake of occupational health services by national mining companies, especially small-scale ones.

### III. Disease surveillance, emergency preparedness and response

Disease surveillance and emergency preparedness and response to public health events are coordinated, at different levels, by the Department of Epidemiology of the National Directorate of Public Health. There are multidisciplinary and multisectoral committees at district, provincial and central levels to coordinate emergency preparedness and response to public health events.

To strengthen surveillance and emergency preparedness, the SATBHSS project increased surveillance capacity at entry points through the creation of cross-border committees and the establishment of joint response mechanisms to outbreaks to allow rapid control of events and the exchange of experiences between countries in outbreak / epidemic management.

### Key results and achievements

#### 1. Cross-border committees operationalised and strengthened

As part of the creation of a platform to strengthen cross-border surveillance and outbreak management, the SATBHSS project supported the establishment of 3 cross-border committees between Mozambique and Malawi. During the current reporting period, 2 meetings were held corresponding to zones 1 and 2. Zone 1 comprises the districts of Lilongwe, Dedza, Ntcheu, Neno, Mwanza, Chikwawa Mbala of Malawi and Chifunde, Angónia, Tsangano, Moatize, Doa de Mozambique. Zone 2 comprises the districts of Salima, Zomba, Machinga, Mangochi and Likoma of Malawi and Mecanhelas, Mandimba, Ngauma, Chimbonila and Lichinga of Mozambique.

The meetings had as objectives: Situation after cyclones Idai and Keneth and review of the progress of implementation of the joint work plans.

The degree of implementation of the activity plans was poor. The zones managed to carry out only cross-border meetings. The low performance was due to the following challenges:

- Resource limitations;
- Weak interaction / communication between the elements of the zones;

<table>
<thead>
<tr>
<th># miner and ex-miners screened for occupational diseases</th>
<th># miners and ex-miners diagnosed with occupational diseases</th>
<th># miners and ex-miners diagnosed with silicosis</th>
<th># miners and ex-miners diagnosed for NIHL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,597</td>
<td>532 (20.5%)</td>
<td>450 (17.3%)</td>
<td>82 (3.1%)</td>
</tr>
</tbody>
</table>

Table 8. Frequency of Occupational Diseases in the established Occupational health Services, 2019
• Reprogramming the budget to accommodate the needs arising from the cyclones;
• High mobility of human resources.

In view of the challenges and circumstances described above, the following deliberations of these meetings were held:

• Remove activities that are not of a cross-border nature and are not implementable from the joint plan;
• Privileging inter district meetings and interactions, as they are viable and cost effective;
• Zones must make efforts to raise funds for other projects or initiatives in order to complement the efforts of the SATBHSS project;
• Zones must plan and perform simulation exercises.

Lessons learned
• Mwanza and Moatize were happy to hold two inter district meetings during the reporting period. The holding of inter district meetings proved to be a viable and cost-effective model of cross-border activities;
• The use of electronic communication platforms (e.g. WhatsApp; Skype; Email; Facebook, etc.) has improved communication between the elements of the zones and the realisation of virtual meetings;
• The participation of countries that are not beneficiaries of the SATBHSS project remains a challenge;
• Local cross-border ownership has been instrumental in most active cross-border areas. Some zones held planned meetings including inter district meetings with their own resources and additional support from central levels.

2. Built outbreak investigations preparedness capacity
This committee conducted a joint outbreak investigation simulation

Results:
• Improved communication with Malawi in joint outbreak management;
• Improved interaction between neighbouring districts in the search for solutions to local challenges, management of patients with chronic diseases and referral systems, mainly HIV and TB;
• Prepared contingency plans for relevant public health problems;
• Cross-border teams were trained through the following trainings:
• Simulation exercises performed for anger and anger;
• Identification of threats and hazards and risk assessment (THIRA).

Strengthening mine health regulation
Aiming to strengthen mine health regulation the country is carrying out a legislation review. The process is ongoing, and the first draft is likely to be available in the following year.
Zambia

**Diagnostic Capacity**

Since 2015, TB diagnosis in Zambia is carried out according to WHO recommended standards and methods which include rapid molecular tests such as GeneXpert MTB/RIF assay (Cepheid, USA), sputum smear microscopy and culture-based methods. There are also tests for resistance to first line and second anti-TB drugs using GeneXpert MTB/RIF (GeneXpert) and line probe assays (LPAs).

According to WHO estimates, smear microscopy coverage in sub-Saharan Africa is at 1.4 laboratories per 100,000 population, acid-fast (AFB) culture coverage is at 0.7 laboratories per five million population and drug susceptibility testing (DST) coverage at 0.4 million per 10 million population. In Zambia, the diagnostic capacity for TB consists of 370 smear microscopy representing 2.2 laboratories per 100,000 population. This is above the sub-Saharan smear microscopy average. There are 209 GeneXpert MTB/RIF, three phenotypic culture and drug susceptibility testing (DST) (representing 0.88 laboratories per 5 million), three Line Probe Assay (LPA), urinary Lipoarabinomannan (LAM) and computer-assisted digital X-ray. Other areas outside the project districts have also benefitted from the project through acquisition and allocation of GeneXpert machines and motorbikes. The figure(s) below summarises the national diagnostic capacity for TB and occupational lung diseases.

Table 3.1. Current TB diagnostic capacity in Zambia

<table>
<thead>
<tr>
<th>Province</th>
<th>Number and % of diagnostic sites</th>
<th>GeneXpert MTB/RIF</th>
<th>Number and % of Microscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>LED fluorescence</td>
</tr>
<tr>
<td>Muchinga</td>
<td>24 6%</td>
<td>9 4%</td>
<td>24 6%</td>
</tr>
<tr>
<td>Northern</td>
<td>27 7%</td>
<td>10 5%</td>
<td>26 7%</td>
</tr>
<tr>
<td>N/Western</td>
<td>28 7%</td>
<td>15 7%</td>
<td>28 8%</td>
</tr>
<tr>
<td>Central</td>
<td>36 9%</td>
<td>21 10%</td>
<td>35 9%</td>
</tr>
<tr>
<td>Luapula</td>
<td>33 8%</td>
<td>13 6%</td>
<td>32 9%</td>
</tr>
<tr>
<td>Copperbelt</td>
<td>78 19%</td>
<td>42 20%</td>
<td>77 21%</td>
</tr>
<tr>
<td>Southern</td>
<td>52 13%</td>
<td>28 14%</td>
<td>38 10%</td>
</tr>
<tr>
<td>Lusaka</td>
<td>59 14%</td>
<td>42 20%</td>
<td>48 13%</td>
</tr>
<tr>
<td>Western</td>
<td>17 4%</td>
<td>12 6%</td>
<td>16 4%</td>
</tr>
<tr>
<td>Eastern</td>
<td>54 13%</td>
<td>15 7%</td>
<td>46 12%</td>
</tr>
<tr>
<td>Total</td>
<td>408 100%</td>
<td>207 100%</td>
<td>370 100%</td>
</tr>
</tbody>
</table>
Expansion of laboratory, GeneXpert and microscopy networks
Before implementation of the SATBHSS project, there were only 370 TB diagnostic facilities and of these, 108 were non-functional due to inadequate infrastructure to perform microscopy or GeneXpert testing. Of the non-functional laboratories, 23 were in the 19 project districts. Since inception, the project has contributed to changing the status quo and expanding diagnostic networks from 370 in 2016 to 408 diagnostic sites in 2018, a 9.3% increase in available diagnostic facilities.

The National TB/Leprosy Control Programme has put in place a maintenance plan for the expanded GeneXpert network which would be covered through procurement of cartridges at a surcharge of US$1.2 per cartridge. The surcharge will be sustained beyond the SATBHSS project with support from other development and cooperating partners such as the Global Fund. However, there is currently no service contract for maintenance of Biological Safety Cabinets and other equipment procured under the project and such should be considered during the 2020 annual work plan and budget.

TB drug resistance surveillance
Surveillance of MDR/RR TB in Zambia is currently conducted at the three reference laboratories at the University Teaching Hospital (UTH) and Chest Diseases Laboratory (CDL) in Lusaka; and the Tropical Disease Research Centre (TDRC) in Ndola. However, TB case confirmation lacked the capacity for molecular detection of second-line drug resistant TB while demand for that service was high due to increasing MDR/RR-TB cases in Zambia. In responding to this diagnostic capacity gap for genotypic and phenotypic testing, the SATBHSS project in 2018 facilitated the engagement of trainers from the Uganda Supra Reference Laboratory to support ten (10) staff from the three culture laboratories (CDL, UTH and TDRC). The training that was provided had to do with molecular testing using Line Probe Assay (LPA) at the Tropical Diseases Research Centre. As a result of this training, three national reference laboratories began testing and reporting on LPA results for second-line drug resistance. This increased the capacity to conduct pre-XDR TB surveillance among referred DR-TB clinical cases and at the time of this review samples were analysed.

TB surveillance, diagnosis and support
Strengthen community outreach activities to improve active case finding and contact tracing: Given the low occurrence of active case finding and non-optimal contact investigations, which is partly a result of weak community outreach programs, the NTP should invest in revamping community outreach activities. One way of doing this is by creating incentives (financial or otherwise) for community workers who are currently working for free. Strengthening community outreach will also help in the control of DR-TB by strengthening patient follow ups which improves adherence to treatment. To that regard, the project has rolled out the RBF program to all the 19 districts with a deliberate focus on strengthening community structures.

Strengthen the M&E framework especially at the lower level for better management of TB data: The survey found that at the lower levels data management is done manually, which is strenuous bordering on data quality. Additionally, data management for community activities such as contact investigations are quite poor and lack proper and standardised registers with facilities having to use improvised ones. The NTLP is actually working towards digitalising data management to improve efficiency, including the introduction of community DHIS2, Data2Care and SMART CARE.
Develop Standard Operating Procedures (SOPs) and algorithms for systematic screening and TB assessment of contacts in order to improve the management of contact tracing: Current contact tracing activities are performed without proper guidelines and clear definitions of an index and a contact. There is also no established algorithm on how to screen and assess TB contacts. As a result, each facility is following different processes convenient to them. In facilitating to fill this gap, NTLP updated standard registers for contacts that hardly existed, which have been printed and distributed to all health facilities. Furthermore, NTP developed, printed and distributed the algorithms for screening TB including contacts. To strengthen this position further, NTLP oriented TB coordinators and nurses in TB guidelines to help standardise the management of TB and contact tracing. The orientation emphasised that every level of the health service including the community should be aware of the high burden of TB and should use every opportunity to screen clients and patients for TB at every entry point into care and the community.

Strengthen the system of administering IPT to PLHIV who have latent TB infection: The survey found that the system of administering IPT is generally weak. The NTP should strengthen this system by first providing clear guidelines on how to manage PLHIV who test negative for TB. Secondly, the survey found poor record keeping regarding IPT. The NTLP should come up with a system of ensuring proper data management for IPT services. The new TB-­

Strengthen the provision of nutritional and psychosocial counselling support to DR-TB patients to accelerate treatment: While Zambia is making important interventions in the control of DR-TB, nutritional and psychosocial counselling services are limited to a few health facilities. This needs to be improved by ensuring all health facilities providing TB services initiate DR-TB patients on nutritional programs and start providing counselling. This will improve adherence to treatment and improve success rates

Supply of laboratory consumables at the reference laboratories
The sustained supply of reagents for diagnostics is essential for efficient testing of specimens and stock out of essential requisites were a common feature before the project. The project provided TB diagnostics commodities and supplies for the period from 2017 to date. Since implementation of the project, at the three culture laboratories, only two stock-out of diagnostic commodities and supplies were experienced in 2017, whilst no stock-outs were experienced in 2018 and 2019. This ensured that there were no disruptions in conducting LPA tests.

Expansion of laboratory network
The project contributed to the expansion of laboratory networks and this has increased the number of available diagnostic facilities in the country with improved access to WHO Recommended Rapid Diagnostic Testing from 65 to 207. Utilization of health facilities has improved, whilst challenges of distance from health facilities have declined. This can be noted by the increase in number of specimens examined from 2017 to 2019. The turnaround time from time-to-test-to-treat has been reduced from 7 days in 2016 to 24 hours.

Support in laboratory quality management systems
The SATBHSS project supported a regional audit training in Stepwise Laboratory Quality Improvement towards Accreditation (SLIPTA), in Maputo Mozambique from 27- 31 March 2017 at which six Zambian participants from the three regional TB culture laboratories were trained. The training enabled the participants understand the WHO AFRO SLIPTA Audit process. They were also able to review the WHO AFRO SLIPTA checklist and practice using this checklist as Auditors. The Zambians trained under the project as East Central and Southern Africa Health
Community (ECSA-HC) and African Society for Laboratory Medicine (ASLM) Auditors were assigned to assess laboratories in other project countries Lesotho, Malawi and Mozambique.

CDL, UTH and TDRC underwent intensive Quality Management System (QMS) mentorship with support from the Centres for Disease Control and Prevention (CDC)/ASLM and under the SATBHSS project. External Auditors from ECSA-HC/ASLM assessed these labs using the SLIPTA checklist. This resulted in the three culture laboratories progressing in Quality Management System from a minimum of three stars to five stars. UTH TB laboratory was ISO 15189 Accredited with SADCAS by end of 2018. Similarly, TDRC TB laboratory was assessed ISO 15189 Accredited with SADCAS during the first quarter of 2019. CDL was undergoing renovations in preparation for another SLIPTA audit scheduled for early next year with project support before progressing to SADCAS assessment.

Teams of ten (10) Zambians trained in Laboratory Quality Management Systems (LQMS) as Assessors/Auditors from the Ministry of Health visited sixteen (16) selected sites across the ten (10) provinces to conduct a baseline assessment using the WHO AFRO SLIPTA Checklist Version 2:2015. All the 16 evaluated sites attained zero (no stars), i.e. they attained less than 55% achievement of the requirements of the WHO SLIPTA checklist Version 2:2015. With support from the project, the remaining phases of SLMTA/SLIPTA and mentorship activities are planned for implementation in 2019.
Diagnostic capacity for Occupational Lung Diseases

The Occupational Health and Safety Institute (OHSI) has the legal mandate to screen and diagnose occupational lung diseases including TB and Silicosis. The diagnostic capacity for occupational lung diseases in Zambia included chest X-ray and lung function tests, GeneXpert MTB/RIF and Acid-Fast Bacilli smear microscopy. With support from the project, the diagnostic capacity for occupational lung diseases has been expanded through procurement of modern equipment to enhance the capacity to diagnose Silicosis and other occupational health conditions and diseases. The equipment procured included one GeneXpert (4 Module), four Gravimetric Dust Samplers, two Sound Level Meters, two diagnostic audiometry machines, two Lung Function Test Machines, two Gas and Dust Detecting Digital Machines, two Class II Biological Safety Cabinets, two BVC Control W/4l PPP Bottle and two X-Ray diffractometry machines (XRD ADX 2500). This has strengthened capacity for diagnostics for silicosis and Tuberculosis.

Overall, the interventions introduced by the SATBHSS project to enhance diagnosis capacity in the country are the ones highlighted in the National TB Strategic Plan (2017-2021). As such, these have been integrated into the routine laboratory.
Gaps identified in the diagnostic capacity

b) Equipment utilisation rates: Low utilization of the GeneXpert observed due to limited sample transportation system coupled with increased load shedding.

c) Geographical coverage: Not all districts have GeneXpert especially the newly created districts, which is coupled with the challenge of inadequate Fluorescent microscopy (FM).

d) Sample transportation system: Inadequate packaging materials and motorbikes per district.

e) Human Resource capacity: Outstanding training needs for specific tests such as phenotypic DST assays for Second line DR-TB testing is still outstanding for the staff in the 3 TB culture laboratories CDL, UTH and TDRC.

f) BSL 3 Level facilities (for TB culture): Need for Equipment replacement and upgrading of 2 culture facilities (CDL and TDRC) to level 3 containment and service contract. There is also need to provide Laboratory Information Management System (LMIS) for CDL and TDRC which are using paper-based method.

Disease surveillance, epidemic preparedness and response

The Zambia National Public Health Institute (ZNPHI) has been given the mandate for ensuring the public health security of the country through a robust surveillance and disease intelligence system.

Disease surveillance in Zambia is conducted in the context of the Integrated Disease Surveillance and Response (IDSR) approach which is a WHO strategy for surveillance in the African Region. IDSR implementation in Zambia began in 2002 and aims to ensure that surveillance for various diseases is conducted with integration of human, financial and other resources. The 19 priority diseases for which surveillance is conducted are highlighted in the IDSR Technical Guidelines and are based on the Public Health Act, the International Health Regulations (IHR) and include other diseases of public health importance including maternal deaths, hypertension and diabetes.

The ZNPHI is responsible for ensuring that events of public health importance are promptly detected and reported with comprehensive interrogation and analysis of the generated data to inform public health actions, response and policy. In the Zambian context, Provincial and District Surveillance Officers anchor surveillance activities at their respective levels while surveillance focal persons lead surveillance activities in the facilities and communities.

The Southern Africa Tuberculosis and Health Systems Support project under sub-component 2.2 supported interventions to strategically revamp the national surveillance system. These focused on key focus areas for the ZNPHI to strengthen and build capacity for disease surveillance, epidemic preparedness and response.

Integrated disease surveillance and response

The IDSR Technical guidelines stipulate that at least 80% of healthcare workers must be trained in IDSR. Zambia currently falls far short of this mark. Prior to 2015, training was conducted for Provincial and District level staff. Recognizing the need to increase Zambia’s surveillance capacity, the SATBHSS project supported in-service training prioritizing facility level staff that are responsible for the initial detection and reporting of health events and diseases. A total of 943 frontline facility level staff from 22 priority districts were trained in IDSR. These included 10 districts sharing borders with the DRC, Malawi and Zimbabwe. Of the total 2,326 staff trained in IDSR in the countrywide, 41% (943) were supported by the SATBHSS project.
At a local level, the project supported establishment and piloting of community-based surveillance (CBS) by training 191 community volunteers to build capacity for surveillance within the community. As a direct result of this training, community members were able to promptly detect, notify and support response to outbreaks of Cholera and Typhoid in Nsumbu (Northern province) and Lumezi (Eastern province) respectively. The trainings on surveillance contributed to enhanced capacity of the districts to detect, notify and respond to diseases and other conditions or events of public health events. Overall, it was observed that timeliness and completeness of weekly reporting from the trained districts had improved in 2018 compared to 2016.

It is critical that consistent effort is made to reach the target level of staff trained in IDSR to ensure that all diseases of public health importance are correctly identified and diagnosed, and appropriate control measures are instituted.

An alternative strategy to increase the availability of trained human resources for IDSR is to incorporate IDSR into the curricula of institutions responsible for the training of pre-service health personnel. The project facilitated three engagements with key stakeholders (16 major health training institutions) to build advocacy and support incorporation of pre-service training in IDSR for health personnel. Through these engagements, a technical working group and implementation plan was developed to facilitate the mechanism for introduction of IDSR in the training curriculum health training institutions. The ZNPHI will provide technical support to the institutions as they integrate IDSR into the curriculum.

**Events-based surveillance**

To strengthen Early Warning and Alert Response (EWAR) as a function of the national surveillance system, the project supported ZNPHI to establish and operationalize event-based surveillance (EBS) in Zambia. Event Based Surveillance increases the sensitivity of the national surveillance system by allowing for the detection of events occurring outside the indicator-based surveillance system. Activities to establish EBS will involve the opening up of hotlines and media scanning, hospital or facility-based surveillance and community EBS. The current situation of the surveillance system with respect to EBS was assessed and key issues were identified through a SWOT analysis which included weak community surveillance. Draft standard operating procedures and plans for EBS implementation were developed. Follow-up activities included the formation of the EBS national technical working group, finalisation and adaptation of the Africa Centre for Disease Control and Prevention (Africa CDC) EBS framework to suit the national context. The project in 2019 has planned to conduct an EBS Trainer of Trainers (ToT) and subsequent roll-out of EBS implementation countrywide to the provinces and districts.

**Monitoring of antimicrobial resistance for DR-TB and other priority communicable diseases**

With respect to monitoring of antimicrobial resistance for DR-TB, the project provided support for antimicrobial resistance (AMR) surveillance for MDR-TB and increasing MDR-TB case detection. However, the project in the last two years did not support sentinel surveillance for AMR. However, the 2019 work plan encompasses activities to strengthen AMR surveillance in Zambia. Notably, the project has allocated funds to adapt standard operating procedures (SOPs) for AMR testing in pathogens of public health importance, on-site microbiology mentorship for provincial laboratories targeted for enrolment in the National AMR surveillance system and Global AMR Surveillance System (GLASS). The project will also mentor three laboratories in quality management systems to ensure quality laboratory testing and surveillance for pathogen of public health concerns.
Gaps in Disease Surveillance, Epidemic Preparedness and Response

Challenges to optimal implementation of IDSR include inadequate human resource for surveillance, low proportion of health workers trained, hard-to-reach areas with poor internet and phone connectivity and limited capacity for laboratory confirmation of public health events. Particularly, there is need to support the roll-out and country wide implementation of EBS, and build more surveillance capacity among frontline healthcare workers, as Zambia has not yet attained the 80% threshold for staff needed to be trained in order to have a fully functional national surveillance system.

Future areas of support include One Health. The One approach is critical to public health security and disease surveillance. So far, a One Health Technical Working Group has been established and a list of priority zoonotic diseases has been drawn. Data sharing, joint outbreak investigations and a one health approach to zoonotic disease research will be prioritized.

Strengthening mine health regulation

Mine safety regulations amended/reviewed

The Mines Safety Department (MSD) is a department under the Ministry of Mines and Minerals Development. Under Section 5(4) of the Mines and Minerals Development Act No. 11 of 2015, it is mandated with the responsibility for matters concerning the environment, public health and safety in exploration, mineral processing and mining operations.

Before the project commenced, MSD used to experience inadequate and erratic funding for carrying out its mandate. As a result, occupational safety and health inspections were not adequately carried out in the mining and related industries. Inspections were focused in large scale mining companies averaging 35 located on the Copperbelt while the rest of the country received little or no attention at all. The SATBHSS project has addressed this challenge by providing financial resources for OHS inspections.

During the implementation period, however, the project initiated the revision of the regulations to respond to the gaps identified during the project design. This included the amendment of the Workers Compensation Act number 10 of 1999 to allow former TB patients to be re-engaged in the mining sector. Health Facilities have been supplied with more sensitive diagnostic tools to detect TB among the vulnerable populations, an act that has created efficiency in producing more accurate results in a timely and effective manner. The project has equipped the Institute with transport to allow for the undertaking of outreach activities.

Status of occupational health and safety legislations

The Occupational Health and Safety Legislation that have been reviewed and or amended because of the Project include:

i. **OSHD – The Factories Act (Cap 441):** The Project has initiated the review of the Act which will enhance enforcement of dust management at workplaces. The proposed amendment is undergoing the Business Regulatory Review process.

ii. **Mine safety - Mines and Minerals Development Act of 2015:** The Project has supported the review of the Explosives Act and the mining (environmental) regulations. The review of the Act and regulations will enhance the adherence to blasting techniques that minimise generation of high dust levels thereby reducing pollution.

iii. **OHSI - Occupational Health and Safety Act number 36 of 2010:** The Project has supported the development of regulations for the Act which were non-existent. Their enactment will enable the OHSI to conduct provide OHS with the backing of the law. The draft regulations have been developed and awaiting circulation to stakeholders.
iv. **Workers Compensation** – The Workers Compensation Act no 10: Workers Compensation Control Board with support from the Project has commenced the review of the Act to allow for the return to work of successfully treated TB patients to the mining sector. The amendment has been approved by Cabinet and will now be presented before parliament for enactment. This will help reduce stigma among former TB patients, at the same time encourage miners who are TB patients to access treatment without fear of losing employment.

During the project implementation three key occupational health services have been established under the SATBHSS project. These include i.) Awareness for Occupational Health and Safety which was not common before the Project, ii). Enhanced TB detection by use of GeneXpert machines as compared to the use of sputum microscopes, and iii). Detection of dust levels by use of real time dust monitors as compared to the Konometers before the project.

### 2.3. Regional Learning and Innovations and Program Management

#### 2.3.1. Component 3.1. Operational Research Knowledge Sharing and Program Management

A. **Conducting priority regional operational research studies**

Under the SATBHSS project, a number of regional studies were approved for regional implementation and coordination. These studies are cross cutting among the participating project countries, and it was envisaged that a common methodology be adopted to ensure cross country learning. While the coordination is at regional level, data and findings will be owned by the respective countries as stipulated in the Subsidiary Agreements between the Countries’ and the regional organisations. In the year 2019 the following activities were implemented as indicated below:

(i) **Cost benefit analysis and health impact study of investing in TB control** - Data collection was completed in all four countries and draft report shared to all participating countries and other stakeholders. Stakeholders workshop will be convened in order to receive final comments before finalisation of the report. In summary, Lesotho, found evidence of improvement in all four key intervention variables and a wide range of productivity losses for TB patients. The mining facilities reported very small impacts from TB and other occupational lung diseases. The benefit-cost ratio was highly favourable, with up to $9.02 in economic benefits for every dollar invested. Malawi data revealed substantial productivity loss among TB patients throughout the episode of illness and a reduction in the number of days between onset of TB symptoms and receiving a TB diagnosis. However, there was mixed evidence associated with SATBHSSP: improvement in three key intervention variables, worsening in an additional three intervention variables, and no change in one intervention variable. Combining all outcomes, the overall benefit-cost ratio was -0.07. Mozambique data showed that SATBHSSP was associated with favourable changes on all of the health impact measures available. However, none of these changes was statistically significant. For Zambia, data from key informants suggested productivity losses peaked during the intensive phase of drug-sensitive TB (DS-TB) and multi-drug resistant-TB (MDR-TB) treatment, compared to pre-diagnosis or continuation phases. The health impact assessment found statistically significant effects on two outcome variables which, ironically, acted in opposite directions. Rates of TB/HIV (Rates of TB detection in HIV-positive persons) deteriorated significantly, while rates of TB detection overall improved significantly in SATBHSSP
districts compared to control districts. Results on other health impact outcomes were mixed in direction and not statistically significant. The benefit-cost analysis was favourable overall, yielding $2.00 gained per dollar invested.

(ii) Regional out of pocket study as a barrier to access TB services in the region:
Lesotho has completed the study and the final report has been submitted to the regional consultant for the regional analysis and comparison with the other participating countries. They have also managed to prepare policy briefs based on the outcome of the study. The overall out-of-pocket expenditure for the treatment of a single episode TB was M3391 (~US$260), which is significant when comparing to the minimum monthly wage of a domestic worker which starts at M624 (US$48) or a factory worker who earns approximately M2000 (US$153) per month. The OOPE for MDR-TB is greater at a total cost of M47,053 (US$3,619) which comprises mainly of direct non-medical costs of M44,894 (US$3,453). The study found that the health system in Lesotho has been successful in keeping the direct medical cost for diagnosis and treatment of TB low. However, the non-medical and indirect costs are the cause of driving a sizable proportion of individuals into the ‘medical poverty trap’. Nearly a quarter of individuals resorted to coping strategies to deal with the associated financial stresses from TB. Approximately 21% borrowed money to cover costs incurred during TB treatment while 5% sold their personal property to finance the cost incurred during TB treatment. Those with MDR-TB are hardest hit by the financial implications, with 80% reporting receiving support – mainly in the form of food from family. Malawi completed data analysis and submitted a draft report for review; however, they are required to submit a data set to the regional consultant so that it can be included for the regional review and analysis. Mozambique is at final stages of negotiation with the consultant to do the work, while Zambia is still looking for the consultant to do the work, this is due to the challenges faced after failing to engage the selected firm in the previous process after conducting due diligence;

(iii) Review of implementation of harmonisation of TB management guidelines: Data collection has been completed in all the countries and a draft roadmap to implement the recommendations.

(iv) Study on Opportunities for Private Sector Participation in TB Control:
The study on opportunities for private sector participation in TB control was finalised. The study was aimed at (i) assessing the level of engagement of private sector, NGO’s, Faith Based clinics and hospitals, and public-private collaboration in SADC countries on TB control; (ii) identifying opportunities, risks, challenges and key strategic priorities to further expand private sector support to TB prevention and care; and (iii) recommending on the development of a regional strategy for private sector engagement in TB control based on identified opportunities and lessons learnt. The results of the study noted that private sector engagement in the four countries is still at infancy stage with different models being used in the four project countries. It was further noted that engagement with faith-based organisations is stronger compared to for-profit private sector. Some of the key challenges noted by the study included weak regulations and enforcement capacity; limited capacity for engagement, monitoring and evaluation; and inadequate incentives and enablers. The study recommended the need for governments to strengthen regulatory environment to facilitate effective engagement of the private sector. It further recommended that governments and partners should increase financial and technical support to National TB programmes for development/updating, implementation and monitoring PPM action plans.
(v) Baseline Study on Mine Health Regulation and Occupational Health and Safety Services in Southern Africa

The baseline study was finalised, and reports are under review. Preliminary results indicate that most legal framework on OHS in the project are fragmented and inadequate. The silica dust controls in the study mines focused on respiratory protective devices (RPDs) as the primary control measure, however, the selection of the RPDs was not informed by a proper risk assessment. The protection factors and approval of the RPDs were not specified, poorly maintained and not frequently used. Table one provides a summary of findings on respirable crystalline silica dust time-weighted average concentrations.

<table>
<thead>
<tr>
<th>Country</th>
<th>n</th>
<th>Below Detection Limits (BDL)</th>
<th>0.025a mg/m³</th>
<th>0.05b mg/m³</th>
<th>0.1c mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesotho</td>
<td>87</td>
<td>62 71.3%</td>
<td>25 28.8%</td>
<td>18 20.7%</td>
<td>11 12.6%</td>
</tr>
<tr>
<td>Malawi</td>
<td>85</td>
<td>35 41.2%</td>
<td>50 58.8%</td>
<td>39 45.9%</td>
<td>26 30.6%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>87</td>
<td>77 88.5%</td>
<td>10 11.6%</td>
<td>5 5.8%</td>
<td>0 0%</td>
</tr>
<tr>
<td>Zambia</td>
<td>137</td>
<td>69 50.4%</td>
<td>68 49.7%</td>
<td>32 23.4%</td>
<td>20 14.6%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>396</td>
<td>195 49.2%</td>
<td>153 38.6%</td>
<td>94 23.7%</td>
<td>57 14.4%</td>
</tr>
</tbody>
</table>

Note: aACGIH TLV, bNIOSH PEL, cRSA OEL

The study made the following recommendations:
- Develop occupational exposure limits guidelines, consider developing a regional occupational exposure limit guideline similar to SADC Global harmonisation system policy. Considering that it takes time to develop in-country guidelines especially when there is limited expertise.
- Ensure the risk assessment (RA) is mandatory by developing guidelines and ensuring that RA is a fundamental right in the OHS law.
- Assist countries to develop occupational health and safety programmes such as occupational hygiene, medical surveillance, hearing conservation, PPE programmes.
- Conduct a further study to ascertain the exposures that were below detection limit during the dry season using the bulk sampling technique, gravimetric sampling, particle size distribution and lung surface deposition methodology.

B. Knowledge sharing

Within the roles of ECSA-HC and AUDA-NEPAD in facilitating knowledge exchange and regional learning, in addition to the technical areas highlighted in the report, ECSA-HC and AUDA-NEPAD coordinated knowledge sharing platforms summarised below: -

(i) Conferences and symposia: ECSA-HC and AUDA-NEPAD in collaboration with the four participating countries and partners hosted satellite symposia sessions in the International Conferences that provided opportunities for the project countries to show case the project results regionally and globally. During the 50th Union World Conference on TB and Lung Health in Hyderabad in India, ECSA-HC and AUDA-NEPAD organised a session to share the findings of the studies conducted in the countries as well as the regional studies.
Project countries were also supported to present project results at the OSHAfrica 2019 Conference, held from 18 to 20 September 2019 in Johannesburg, South Africa. The Conference attracted over 1,200 delegates from more than 57 countries. There were 16 presentations about the SATBHSS project, including two keynote addresses (one by the Honourable Minister of Mines of Zambia, Richard Musukwa), eight oral presentations, four panel discussions, and two poster presentations. Dr Fwasa Singogo from Zambia won the best poster presentation award. Table 1 depicts the breakdown of the presentations by project countries at the Conference;

(ii) SATBHSS project web portal: ECSA-HC and AUDA-NEPAD responsible for managing, coordinating and providing technical support to the four countries in communication, advocacy and Outreach. A communication, advocacy and outreach strategy for the project was developed. As part of that strategy, ECSA-HC developed a regional project website and the countries web portals through consultation with the country teams who continuously provide content for the website. The country teams were trained on content management and have continuously updated the portal with contents with the support from the AUDA-NEPAD. The portal is fully functional and available through the following URL- http://satbhss.org

Lesotho

Operational research and knowledge sharing
The protocol of the first operational research: Tuberculosis (TB) screening and Isoniazid Preventative Therapy (IPT) update among child contact of bacteriologically confirmed Pulmonary TB (PTB) patients in Maseru Lesotho was reviewed with the technical assistance from
ECSA-HC until early September 2019. It was due for re-submission to MOH ethics committee for approval for the second time. During the CoP meeting held in Maputo in November 2019 it was agreed that the protocol should be revised together with two additional studies namely, factors associated with TB mortality and secondly the burden of TB among Healthcare workers. Health personnel and staff from other institutions have been identified to lead these studies. ECSA-HC will visit the country in the first quarter of 2020 to provide technical assistance on finalising the proposals and timelines for the completion of these studies.

The second Operational research; Timing of anti-retroviral therapy and TB treatment outcomes in patients with TB/HIV in Leribe district, Lesotho. Draft Report is available and preliminary comments on the report have been addressed by the principal investigator. The principal investigator has shared the datasets of the study in order to run some statistical tests as advised. In addition, the preliminary report has been shared with ECSA-HC for review and inputs. It is envisaged that the final report of the study will be finalised by the second quarter of 2020. There was a delay in finalising the study results and this was due to competing activities.

**Introduce TB client satisfaction routine monitoring at facility level**
Routine monitoring on client satisfaction in relation to TB services is currently implemented in 13 health facilities. All the 13 facilities were expected to report during this period. Reporting was unsatisfactory as only three facilities were able to report during this period despite the supervision that was done by the field M&E Officers. Follow up was done to sensitise facilities and also to establish reasons for non-reporting. Data from the three (3) facilities showed that 64 patients were eligible for the survey however only 56 were reached with the client satisfaction questionnaire. All those reached were satisfied with the TB services provided in their facilities.

**Tuberculosis out-of-pocket expenditure study**
Health focus was engaged to conduct the study, preliminary findings of the study were shared with the stakeholder in June 2019. Inputs were provided to the service provider after the preliminary findings meeting. The study has been finalised and disseminated.

**Cost benefit analysis and health impact study**
Brandies University was engaged to implement the study, currently the study is in the last phase of data collection. Initial results of data collected were presented during the midterm review meeting of the project held in Mozambique. It is envisaged that draft report of the study will be available before the end of the first quarter of 2020.

**Malawi**

**Operational research and knowledge sharing**
A final report for the study, *Prevalence of Pulmonary Tuberculosis and TB/HIV co-infection among miners in selected districts of Malawi in 2018* was produced during the period under review. Findings of the study were disseminated at the Operations research, monitoring and evaluation community of practice meeting in Maputo. Work continued on the other commissioned study; Assessment of Tuberculosis prevention and care measures in Mining Industries in Malawi. It is anticipated that a report for this study will be produced during the first quarter of 2020.

Apart from the two studies, the project also supported a study on Out-of-Pocket Expenditure as a Barrier to Accessing TB Services. A report of the study was produced and was commented on. It is anticipated that the consultants will incorporate the comments into the final report that will be shared during the first quarter of 2020.
Mozambique

**Operational research and knowledge sharing**

The SATBHPSS supported the implementation and dissemination of regional and country-led operational studies. Please see the tables nine and 10 below.

*Table 9. Implementation status of SATBHSSP funded regional studies*

<table>
<thead>
<tr>
<th>Regional Studies</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost benefit analysis and health impact study of investing in TB control</td>
<td>Data collection, clearance and analysis was concluded. Pending draft report by Brandeis University team/ECSA-HC.</td>
</tr>
<tr>
<td>Review of implementation of harmonisation of TB management guidelines</td>
<td>Concluded. The results were disseminated in the Union Conference (India) and in the CoP for M&amp;E and Research and Continuum of Care.</td>
</tr>
<tr>
<td>Training needs assessment for TB and other services under the project</td>
<td>Not implemented in Mozambique</td>
</tr>
<tr>
<td>Regional out of pocket study as a barrier to access TB services in the region</td>
<td>Finalising negotiation of the contract.</td>
</tr>
</tbody>
</table>

*Table 10. Implementation status of country’s led operational studies*

<table>
<thead>
<tr>
<th>In-country studies supported by SATBHSSP</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Studies</td>
<td>Two out of two were concluded.</td>
</tr>
<tr>
<td>Service Readiness Assessment of key TB sites in SATBHSSP priority intervention sites</td>
<td>It was concluded. The final report was submitted to MISAU.</td>
</tr>
<tr>
<td>Analysis of the Epidemiological Profile of Tuberculosis in Mining Communities in the Provinces of Manica, Tete, Zambezia and Cabo Delgado.</td>
<td>The consultant firm submitted the preliminary results for MISAU feedback; Currently, addressing comments provided by MISAU.</td>
</tr>
<tr>
<td>Optimizing Investments in Mozambique’s Tuberculosis Response Results of a TB Allocative Efficiency Study</td>
<td>The data collection, cleaning and analysis were conducted. The draft report was shared with MISAU Pending the final version with MISAU comments addressed.</td>
</tr>
<tr>
<td>Conduct a LQAS based KAP survey to ascertain knowledge and behaviours related to TB among vulnerable</td>
<td>The protocol was developed in partnership with CISM. Pending Ethics clearance</td>
</tr>
</tbody>
</table>
Supported the dissemination of regional and country led studies

- Supported four Mozambicans to attend The Union Conference (India)
- Eight abstracts (Five oral; Onee-poster and Two paper posters) presented

Figure 13. Participation of abstracts of country’s studies in
The Union World Conference, India, 2019

Zambia

Operational research and knowledge sharing
A number of operations research studies were planned to be executed during the period under review. Two research studies have been concluded and manuscripts have since been developed. The reports are undergoing internal review before they could be finalised, and results disseminated.
Table 4.1 below summarises the researches that were scheduled to be undertaken during the period under consideration.

### Table 4.1 Status of operational research and other studies

<table>
<thead>
<tr>
<th>SN</th>
<th>Title of Study</th>
<th>Status</th>
<th>Next Steps/Milestones</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Assessment of Silicosis – Prospective study</td>
<td>Development of TORs</td>
<td>Finalise TORs and submit No Objection</td>
<td>OHSI</td>
</tr>
<tr>
<td>3.</td>
<td>Assessing TB under reporting in Zambia</td>
<td>Evaluation done</td>
<td>Submit report for approval Shortlisting</td>
<td>NTLP</td>
</tr>
<tr>
<td>4.</td>
<td>Mortality attributed to TB among patients in Zambia</td>
<td>Evaluation done</td>
<td>Submit report for approval Shortlisting</td>
<td>NTLP</td>
</tr>
<tr>
<td>5.</td>
<td>Assessment of TB among healthcare workers in Zambia</td>
<td>Invitations sent out to firms</td>
<td>Conduct evaluation</td>
<td>NTLP</td>
</tr>
<tr>
<td>6.</td>
<td>Determination of type and frequency of adverse events and adverse drug reactions among TB patients on second-line drugs</td>
<td>Invitations sent out to firms</td>
<td>Conduct evaluation</td>
<td>NTLP</td>
</tr>
<tr>
<td>7.</td>
<td>Incidence, pattern and treatment outcomes of patients with TB among miners and ex-miners, Zambia (2010-2015): A retrospective cohort study</td>
<td>Data cleaning, verification and analysis done; Draft manuscript and report submitted to NTLP for review</td>
<td>Share report after internal review by MOH Dissemination of results</td>
<td>NTLP</td>
</tr>
<tr>
<td>8.</td>
<td>Treatment outcomes for drug susceptible PTB among miners and non-miners on the Copperbelt province of Zambia</td>
<td>Data cleaning, verification and analysis done; Draft manuscript and report submitted to NTLP for review</td>
<td>Share report after internal review by MOH Dissemination of results</td>
<td>NTLP</td>
</tr>
<tr>
<td>9.</td>
<td>Out-of-Pocket expenditure for TB</td>
<td>Evaluation done and firms shortlisted</td>
<td>Invite shortlisted firms to submit technical and financial proposals</td>
<td>NTLP</td>
</tr>
</tbody>
</table>
### 2.3.2. Sub-component 3.2. Centres of Excellence in TB and Occupational Lung Disease Control

**Centres of excellence**

Countries prioritized establishment of CoEs as follows: - Lesotho - CoE in Community based TB Care, Malawi - Community TB and Integrated Disease Surveillance, Mozambique - Management of Drug-Resistant Tuberculosis and Paediatric TB Management and Zambia – Occupational Health and Safety. ECSA-HC under the SATBHSS Project, supported countries in the development of concept notes for the establishment of Centres-of excellence and currently supporting the implementation. ECSA-HC provided further implementation support for the CoE in Lesotho, by facilitating a knowledge exchange on performance-based funding for community TB care in Rwanda; support for developing the framework for performance-based indicators; support for negotiations with the Implementing entity recruited by the country for implementing the CoE; and support for developing the guideline for community TB care. Additional support is being provided on countries’ request.

**Lesotho**

**Centres of excellence in community based TB care**

**Engaged an NGO to implement community TB care activities (coe)**

Partners in Health was engaged in May 2019 for 18 months to implement community TB activities. The NGO officially started to operate in June 2019. Implementation of the community TB care activities is in two districts namely Leribe and Berea. The interventions implemented are focusing on increasing TB case detection and improving treatment outcomes through strengthening community systems. Implementation commenced in Leribe district with sensitisation of DHMT and other stakeholders. The visits were also extended to cover all the 28 health facilities in the district. Implementation started with training of 1635 VHWs and VHW supervisors on TB Care and Management. Following the training 6296 clients were screened for TB at the community level. By end of November 2019, 69 TB cases were notified as result of community TB screening in Leribe district.
TB screening using the mobile x-ray clinics commenced aggressively in November 2019, and by end November 871 clients were screened for NCDs during TB mobile clinics, 171 of these clients accessed HTS during at mobile clinics days. The roll out to Berea district is scheduled to commence in January 2020. Through this initiative the country is aiming at increasing TB case detection and improving treatment outcomes by capacitating the community systems.

![Figure 6: Mobile clinic during the community campaigns](image)

**Malawi**

**Centres of excellence on community TB and integrated disease surveillance**

Malawi is hosting the continuum of care centre of excellence focusing on Community TB and integrated disease surveillance. The objectives of the centre are:

1. To enhance innovations in community TB care including TB screening, strengthening TB diagnostic and sample transportation
2. To strengthen screening referral and surveillance for TB, occupational lung diseases and other IHR notifiable diseases and conditions among mining and other high-risk groups
3. To establish an e-Health based system to support patient management and data reporting
4. To improve on human resource capacity for TB and occupational health and safety
5. To improve Disease surveillance for TB, occupational health and other notifiable disease

A number of activities have taken place during the period under review. The major focus has been on strengthening the e-health for community interventions. To this effect, the project continued on working on the E health system to support community interventions. The period under review saw the project continue working in the 20 sites where the system was deployed.

The system is helping in providing improved community TB care interventions with minimal diagnostic and treatment delays as information flow has greatly improved from the community to the health facility through use of modern technologies such as smartphones that are at the centre of information sharing from a presumptive TB case in the community and the facility where testing of sputum samples and treatment is provided.
The system has handled **15,125 samples** as can be seen from the figure below:

![E-Health Dashboard](image)

**Figure 6: E-Health Dashboard**
Mozambique

Centres of excellence in clinical and programmatic management of MDR-TB and child-TB.
Following the vision to innovate, lead and learn from different technical areas, Mozambique has committed to develop the centre of excellence in clinical and programmatic management of MDR-TB and Child-TB. It aims to implement and generate best practices in surveillance, diagnostics, treatment, prevention, research and technical support related to the programmatic management of MDR-TB in Mozambique. In this regard, substantial progress has been made in innovation as summarised in the table below.

Table 11. Summary of the progress of implementation CoE

<table>
<thead>
<tr>
<th>Component</th>
<th>Key intervention area</th>
<th>Key results and achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strengthening institutional capacity to provide quality MDR-TB services.</td>
<td>Sample referral systems for first- and second-line DST</td>
<td>Purchased 119 motorbikes: 8,526 SS transported; 1,060 diagnosed for TB and linked to care.</td>
</tr>
<tr>
<td></td>
<td>National and regional disease and drug surveillance</td>
<td>Strengthened Refurbishing and upgrading the capacity of sub-national ref. labs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improved quality of TB Reference laboratory. Labs achieved three and one (Nampula) Four SLIPTA stars in the last audit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strengthened the national capacity for Gene Sequencing. Three Lab technicians were trained abroad.</td>
</tr>
<tr>
<td></td>
<td>Health information system</td>
<td>Transition from paper to electronic based has, successfully, accomplished.</td>
</tr>
<tr>
<td></td>
<td>Tele-mentoring and/or videoconference centres.</td>
<td>Established the video conference system (ECHO) in Four out of six provinces; 400 DR-TB clinical cases (adult and children) have been discussed.</td>
</tr>
<tr>
<td>Implementation and generation of best practices in DR-TB management.</td>
<td>DR-TB and child –TB service cascade</td>
<td>Introduced cough officers for rapid TB screening within HFs - Yields to 30% of all TB case notifications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Introduced new all oral short-drug regimen for DR-TB patients;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Introduced the TB child-friendly formulations;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Developed child and DR-TB guidelines;</td>
</tr>
<tr>
<td>Technical support, collaboration, training, and research</td>
<td>Mentorship programs Local and regional collaboration</td>
<td>Established a national DR-TB therapeutic committee;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Developed and launched a mentorship program (adult and child TB);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Established a knowledge exchange platform with Lusophone countries in Africa.</td>
</tr>
</tbody>
</table>
Zambia

Centres of Excellence in TB and Occupational lung disease control
During the year 2019, The following have been the achievements in 2019

<table>
<thead>
<tr>
<th>S/N</th>
<th>Planned Activity</th>
<th>Planned Output</th>
<th>Achievement</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conducting medical surveillance at OHSI</td>
<td>-</td>
<td>76,058 examined, with 272 being certified for compensation and 76% already receiving compensation.</td>
<td>GeneXpert now in use and all TB cases started on TB treatment onsite</td>
</tr>
<tr>
<td>1</td>
<td>Conduct 4 Outreach sessions to Screen Ex-miners</td>
<td>500</td>
<td>1,409</td>
<td>There is need to roll out sessions to other regions</td>
</tr>
<tr>
<td>2</td>
<td>Conduct 12 Outreach sessions to Screen Miners</td>
<td>4,500</td>
<td>12,470</td>
<td>Need to open off site stations</td>
</tr>
<tr>
<td>3</td>
<td>Installation of Electronic Information Management System (EIMS) – OHASIS</td>
<td>Integrated EIMS installed</td>
<td>ToRs developed, engaged NIOH RSA for OHASIS (EIMS). Awaiting no objection through STEP</td>
<td>OHASIS is a ready to use system with very few adaptions to be made at low cost</td>
</tr>
<tr>
<td>4</td>
<td>Enhance human resource in PACS and B-Reading</td>
<td>27 Doctors from project target districts</td>
<td>Not done</td>
<td>Awaiting ILO to produce digital x-ray training materials</td>
</tr>
<tr>
<td>5</td>
<td>Expanding health cadres (pre-service and in-service training)</td>
<td>3 Doctors 1 Bio Medical Scientist (BMS) 1 Radiographer 1 Audiologist 1 Hygienist</td>
<td>2 Doctors (Pathologist &amp; Radiologist) 1 BMS 1 Radiographer 1 Hygienist</td>
<td>It is difficult to balance training needs and workload balance for remaining staff</td>
</tr>
<tr>
<td>6</td>
<td>Purchase of ICT equipment and software for digitisation of Medical Records</td>
<td>Digitise medical records</td>
<td>Evaluation Conducted awaiting MPC</td>
<td>The delay has been due to procedural challenges within MoH</td>
</tr>
<tr>
<td>7</td>
<td>Purchase of Laboratory Consumables</td>
<td>8,000 Xpert Cartridges 8,000 Sputum Containers 2018 heparin containers</td>
<td>Not yet procured</td>
<td>Awaiting central procurement at MoH HQ</td>
</tr>
<tr>
<td>S/N</td>
<td>Planned Activity</td>
<td>Planned Output</td>
<td>Achievement</td>
<td>Comment</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Development of OHS regulations</td>
<td>16 Regulations</td>
<td>16 Draft Regulations developed. Submitted to BRRA</td>
<td>Awaiting clearance by BRRA</td>
</tr>
<tr>
<td>9</td>
<td>Conduct Silicosis Baseline study</td>
<td>Silicosis Baseline Report</td>
<td>Contract awarded; Inception report approved.</td>
<td>Data collection and analysis to start after 1st payment this week</td>
</tr>
<tr>
<td>10</td>
<td>Renovations – Kitwe</td>
<td>COE Renovated</td>
<td>Renovations almost 75% done</td>
<td>External works still pending</td>
</tr>
<tr>
<td></td>
<td>Solwezi</td>
<td>OHSI offices completed</td>
<td>Contract awarded late and contractor mobilised</td>
<td>There were some encumbrances that took long to be resolved by MoH</td>
</tr>
<tr>
<td>11</td>
<td>Procurement of modern equipment to diagnose silicosis and other occupational lung diseases</td>
<td>20 Pieces of equipment</td>
<td>Not yet procured</td>
<td>Refer to update by Procurement Unit</td>
</tr>
<tr>
<td>12</td>
<td>Procurement of Laboratory Equipment</td>
<td>7 pieces</td>
<td>Not yet procured</td>
<td>Refer to update by Procurement Unit</td>
</tr>
<tr>
<td>13</td>
<td>Procurement of office furniture for Solwezi offices</td>
<td>New Solwezi offices fully furnished</td>
<td>Not yet procured</td>
<td>Refer to update by Procurement Unit</td>
</tr>
</tbody>
</table>

**A. Operationalisation of communities of practice**

Communities of Practice (CoP) are regional working groups comprised of technical experts in the respective areas from each of the countries and are responsible for setting regional priorities for implementation. ECSA-HC through the SATBHSS project coordinated the establishment of CoP based on agreed upon thematic areas and countries’ leadership in each of CoP considering the respective countries strengths and comparative advantage. ECSA was responsible for facilitating operationalization of three CoPs by co-facilitating with the respective country leading each CoP and contribute to setting the meeting agenda, coordinating and facilitating technical discussions with the countries. AUDA-NEPAD was responsible of supporting two CoPs with ECSA-HC contributing to the discussions in those CoPs. The quarterly virtual meetings for the COPs on Research and M&E, Laboratory and Surveillance, Continuum of care and annual face-to-face meetings were held as planned, this provided an opportunity for countries to share experiences and provide oversight for reporting implementation progress in line with the RF. ECSA-HC supported the convenings of the three CoPs in 2019. The table below provides a summary of the achievements and key outputs for the CoPs that are coordinated by the ECSA-HC.
Communities of practice countries’ leadership and key achievements

<table>
<thead>
<tr>
<th>CoP</th>
<th>Planned Activity</th>
<th>Key Outputs</th>
</tr>
</thead>
</table>
| Research and M&E           | Lesotho          | • Developed a research implementation framework covering the four countries  
                                 • Conducted operational research studies at country and regional level  
                                 • Shared the findings at the RAC and at the Union conference  
                                 • Undertook capacity building on the results framework for the SATBHSSP reporting, countries are now better reporting than before. Indicators have been updated following discussions at the MTR and targets reviewed.  
                                 • Conducted M&E Capacity building and Data Quality Assessment |
| Continuum of Care          | Malawi           | • Drafted a rapid situation analysis of the implementation of harmonisation of TB management in the mining sector and cross-border referrals  
                                 • Commissioned the assessment of the harmonised TB management guidelines and developed the roadmap for the implementation of recommendations  
                                 • Developed capacity for Introduction/strengthening TB screening for healthcare workers  
                                 • Developed capacity for introduction of MDR-TB patients support in the project countries |
| Laboratory and Surveillance| Mozambique       | • Developed and adopted the Framework for Cross-Border Integrated Disease Surveillance and Response, for SATBHSS Project and surveillance of MDR-TB  
                                 • Provided Expert advice on priority Laboratory and Surveillance needs for inclusion into respective country and ECSA-HC regional work plans  
                                 • Identified 25 Cross Border Surveillance zones for establishment across the four project countries and their neighbours, with 12 of these already operationalised  
                                 • Conducted simulation exercises and risk assessment to inform the development of multi-hazard preparedness and response  
                                 • Developed guidelines and assessment tools to monitor compliance with MDR-TB surveillance |
| Mine Health Regulations and Occupational Health and Safety | Zambia           | • Developed and approved the OSH inspectors and TB inspection guidelines  
                                 • Developed and deliberated on the OSH inspection compliance tool  
                                 • Completed the consultation process for a regional implementation of occupational health and safety information system (OHASIS) and started implementation process in Lesotho and Zambia  
                                 • Completed the regional baseline studies and extracted recommendations which were included in the 2020 activity plans  
                                 • Developed a human capacity development plan on occupational hygiene, occupational health doctors and radiologists, OSH inspectors, etc.  
                                 • Supported the centre of excellence on the development of a strategic plan |
2.3.3. Sub-component 3.3. Regional Coordination, Policy Advocacy, and Harmonisation

A. Regional coordination

Internal project coordination
In order to offer effective regional coordination, a Project Coordination Unit (PCU) was set up and fully staffed by February 2017 at ECSA-HC. The unit comprises of the Project Manager/Accounting officer as the Director General, the Project Coordinator, Senior TB Control Specialist, Senior Laboratory Specialist, Finance Officer, M&E Specialist and Medical Epidemiologist. The Project Senior Public Health Specialist separated with the project in January 2019 due to personal reasons and the project has since recruited a replacement to fill the current gap. The position was critical in supporting the implementation of the research studies and providing technical assistance to the countries on TB control and operational research implementation and data analysis. Based on the project components and needs, the staff have been instrumental in supporting the countries as needed to implement various project activities. The unit is also supported on a need basis by other experts from the ECSA-HC secretariat drawing from the pool of experts in the organisation. Critical additional support on research implementation and M&E roles.

Regional advisory committee (RAC)
This is a key organ that also provides an opportunity for inter-country learning on both technical and matters of policy concerns. In accordance to the Subsidiary agreements signed by between the countries and ECSA-HC and the Project Agreement signed with the World Bank, ECSA-HC was expected to establish and maintain a multi-sectoral and multi-disciplinary Regional Advisory Committee to serve as a vehicle for multi-country and multi-stakeholder expert engagement and dialogue. The RAC builds on the partnerships developed during project preparation and provide a forum for countries (including those not participating in the regional project), and their implementing partners to report on overall program progress and to share experiences and lessons. The RAC provides oversight to inter-country learning and draws from lessons learned to enhance the design of the program and draw policy implications. The committee plays a steering, advisory and consultative role. ECSA-HC facilitated the establishment of the RAC and in collaboration with the project countries, ECSA-HC successfully convened six RAC meetings in December 2016, June 2017, January 2018, November 2018, May 2019 and February 2020. The key outputs of the RAC meetings were inputs to strengthen country and regional annual implementation plans, provided direction on various aspects including:

- Approving regional studies and providing advise priorities for countries’ research agenda;
- Formation of communities of practice and other knowledge management platforms;
- Healthcare workers screening and infection control interventions;
- Technical on TB and Occupational lung disease management and control interventions;
- Engagement of partnership to foster better collaboration in control of TB and lung diseases; and
- Reviewed progress reports and provided suggestions to accelerate implementation.

During the last RAC meeting, key decisions related to the following areas were made:

(i) Key focus interventions at regional level including:

- Cross-border disease preparedness and outbreak investigation & response
- Cross-border TB care, including continuum of care
• Infection Prevention and Control (Health Care Worker Screening)
• Harmonisation of protocols
• Accreditation of labs and achievement of common standards
• Training & knowledge sharing

(ii) Project PDO and indicators were reviewed, updated and adopted for consideration during the project re-structuring

(iii) Proposal for improving the operations of RAC including review of membership

B. Partnerships
The project established/strengthened partnerships and collaborations with other regional organisations and projects to leverage on human, material and technical resources and where possible facilitate synergies and cost efficiencies in implementing the regional projects. These includes: the Bank funded East Africa Public Health Laboratory Networking project supporting laboratory and disease surveillance and preparedness capacities in East Africa; the Global fund regional laboratory strengthening project that is targeting the National TB laboratories in all the four SATBHSS project countries that are among the 18 NTRLs in the networking collaborating with the Uganda Supra National Reference Laboratory (SRL). ECSA-HC and AUDA-NEPAD are now joint Secretariat for the TIMS project and putting efforts to ensure that activities in both projects are synchronized and that there is synergy in the implementation to maximize benefits in the supported countries. ECSA-HC has established collaboration with other partners such as ACDC; ASLM; AUDA-NEPAD; WHO Afro and country offices to support the project countries in various technical areas.

C. Monitoring and evaluation
ECSA-HC is coordinating the M&E functions of the project in the four countries including regular consolidation of the project reports, data quality assessment, capacity building of the country team on the understanding of the project reporting requirements, development of reporting tools

Mid-term review (MTR)
it’s in this regard that ECSA-HC worked closely with the World Bank, Project coordinators and M&E focal persons in the countries and coordinated the implementation of the project mid-term review. During the MTR, ECSA-HC supported the countries in development of MTR guidance documents such as concept note for the MTR and data collection tools and provided technical support to conduct the MTR in the four countries. In additional ECSA-HC also conducted its own internal MTR and submitted the report to the World Bank.

Project restructuring
During the MTR, it was agreed that the project be restructured. The proposed restructuring included the revision of the Project Development Objective (PDO), PDO indicators, as well as the Intermediate Outcome Indicators (IOI) in the results framework. The PDO was proposed to be revised to reflect the investments on supporting the countries to strengthen disease preparedness and response capacities and also investments on occupational health and safety, which were not captured in the current PDO. Some indicators were noted to be challenging in terms of reporting, therefore were proposed for deletion, revisions or re-wording. ECSA-HC had taken leadership in this process working closely with the countries, convened several consultative meetings with technical experts in various communities of practice in proposing revisions to the project indicators and targets post the MTR. ECSA-HC consolidated all the inputs and suggestions for revisions from the countries and submitted to the World Bank for further internal processes before they are officially communicated to the countries.
Routine reporting
ECSA-HC is mandated to collect and aggregate project-monitoring data from the four participating countries. To facilitate this, ECSA-HC has jointly established common project reporting requirements for the countries, established a community of practice of M&E officers (who on quarterly basis have been submitting reports), and provided support to the countries on reporting tools, formats and frequency of reporting. ECSA-HC has also been periodically organising M&E capacity building and data quality checks to ensure that data collected and submitted to the World Bank is of good quality.

The report for January to December 2019, shows that the project has achieved the targets for three out of five (60 percent) project outcome indicators, and for 12 out of 15 intermediate outcome indicators (80%). Overall, the project achieved annual targets for 15 out of 20 project indicators equivalent to 75 percent performance.

2.3.4 Financial Management

Cash flow and financial performance
During the reporting period ECSA-HC through the project received funding of $2,466,148 in total from the four countries to support implementation of regional activities planned for 2019. This disbursed amount represents 93% of the total budget for 2019 work plan. The expenditure to December 2019 was at $1,708,883 which is 69% of the disbursed amount and 64% of 2019 annual work plan budget (2,657,796).

AUDA-NEPAD through the project received funding of $ 971,529 in total from the four countries to support implementation of regional activities planned for 2019. This disbursed amount represents 45% of the total budget for year. The expenditure by December 2019 was at $ 926,409 which is 95% of the disbursed amount and 42% of 2019 annual work plan budget ($2,180,089).

For Lesotho, A total budget of $5,088,254 was approved under the annual work plan FY 2019. By December 2019, disbursement of $5,977,092 was made. The expenditure was $3,730,202 by December 2019 with a spending rate of 117% against disbursement and 73% against the annual approved budget.

For Malawi, Total budget of $4,508,580 was approved under the annual work plan for 2019. Out of which a disbursement of $4,735,042 was made during the year. The expenditure was $3,371,581 by December 2019 with a spending rate of 71% against disbursement and 75% against the approved annual budget.

For Mozambique, A total budget of $14,951,244 was approved under the annual work plan for FY 2019. By December 2019, a disbursement of $13,330,720 was made. The expenditure to December 2019 was at $5,202,209 which is 39% of the disbursed amount and 35% of 2019 annual work plan budget.

For Zambia, A total budget of $20,619,702 was approved for the annual work plan for FY 2019. A disbursement of $10,163,461 was made as at December 2019. The expenditure to December 2019 was at $9,909,526 which is 98% of the disbursed amount and 48% of 2019 annual work plan budget.
**Consolidated disbursement and financial performance**

Overall a total of $37,643,992 (75%) was disbursed against the combined approved budget of $50,005,665 for FY 2019. By end of December 2019, the overall expenditure was at 24,848,810 (50% of the overall approved budget). The table below summarises the consolidated annual financial performance by Project Country/Regional Organisation.

*Table 1: Financial summary per country/organisation for January to December 2019*

<table>
<thead>
<tr>
<th>Country/Organisation</th>
<th>Budget US$</th>
<th>Disbursed US$</th>
<th>Spent US$</th>
<th>Expenditure against Budget</th>
<th>Disbursement against Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECSA-HC</td>
<td>2,657,796</td>
<td>2,466,148</td>
<td>1,708,883</td>
<td>64%</td>
<td>93%</td>
</tr>
<tr>
<td>AUDA-NEPAD</td>
<td>2,180,089</td>
<td>971,529</td>
<td>926,409</td>
<td>42%</td>
<td>45%</td>
</tr>
<tr>
<td>Lesotho</td>
<td>5,088,254</td>
<td>5,977,092</td>
<td>3,730,202</td>
<td>73%</td>
<td>117%</td>
</tr>
<tr>
<td>Malawi</td>
<td>4,508,580</td>
<td>4,735,042</td>
<td>3,371,581</td>
<td>75%</td>
<td>105%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>14,951,244</td>
<td>13,330,720</td>
<td>5,202,209</td>
<td>35%</td>
<td>89%</td>
</tr>
<tr>
<td>Zambia</td>
<td>20,619,702</td>
<td>10,163,461</td>
<td>9,909,526</td>
<td>48%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50,005,665</td>
<td>37,643,992</td>
<td>24,848,810</td>
<td>50%</td>
<td>75%</td>
</tr>
</tbody>
</table>
Annexes
- Annex 1: List of trained participants
- Annex III: Updated Results Framework

**Annex I: Health professionals trained under various programs**

<table>
<thead>
<tr>
<th>Training program</th>
<th>Mode of training</th>
<th>Cadre trained</th>
<th>Numbers trained/target</th>
<th>Collaborating partner</th>
<th>Countries covered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TB management, prevention and control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced course on clinical management of DR-TB</td>
<td>Organised workshop with practical exposure</td>
<td>Clinicians and TB officers</td>
<td>6/6</td>
<td>WHO, Latvia</td>
<td>All countries</td>
</tr>
<tr>
<td>MDR-TB management - short regimen</td>
<td>Organised workshop with practical exposure</td>
<td>Clinicians and TB officers</td>
<td>12/12</td>
<td>Rwanda Ministry of Health and School of Public Health</td>
<td>Malawi, Mozambique and Zambia</td>
</tr>
<tr>
<td>TB infection control and healthcare workers screening</td>
<td>Organised workshop with practical exposure</td>
<td>TB officers from countries and ECSA-HC</td>
<td>167/76</td>
<td>Biomedical Research and Training Institute</td>
<td>All countries</td>
</tr>
<tr>
<td>Performance based financing to accelerate TB control interventions</td>
<td>Exchange learning</td>
<td>Project implementing team</td>
<td>10/10</td>
<td>Rwanda Ministry of Health and School of Public Health</td>
<td>Lesotho and Zambia</td>
</tr>
<tr>
<td>PAL training, quality of TB care and specimen transport system</td>
<td>Exchange learning</td>
<td>Clinicians and TB officers</td>
<td>12/10</td>
<td>Rwanda Ministry of Health and School of Public Health</td>
<td>Malawi, Mozambique and Zambia</td>
</tr>
<tr>
<td>TB recording, reporting, data quality assessments and analysis for decision making</td>
<td>Organised workshop with practical exposure</td>
<td>TB coordinators</td>
<td></td>
<td>Ministry of Health, Kenya</td>
<td>Zambia</td>
</tr>
<tr>
<td>Training program</td>
<td>Mode of training</td>
<td>Cadre trained</td>
<td>Numbers trained/target</td>
<td>Collaborating partner</td>
<td>Countries covered</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>--------------------------------</td>
<td>------------------------</td>
<td>------------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Laboratory quality systems auditors</td>
<td>Organised workshop with practical exposure</td>
<td>Laboratory specialists</td>
<td>26/20</td>
<td>African Society for laboratory Medicine (ASLM), WHO AFRO</td>
<td>All project countries</td>
</tr>
<tr>
<td>Laboratory mentorship</td>
<td>Organised workshop with practical exposure</td>
<td>Laboratory specialists</td>
<td>21/20</td>
<td>African Society for laboratory Medicine (ASLM), WHO AFRO</td>
<td>All project countries</td>
</tr>
<tr>
<td>Certification of SLIPTA Auditors</td>
<td>Practical field training</td>
<td>Laboratory specialists</td>
<td>14/14</td>
<td>African Society for laboratory Medicine (ASLM), WHO AFRO</td>
<td>All project countries</td>
</tr>
<tr>
<td>Technical training in 1st and 2nd line DST</td>
<td>Practical laboratory training</td>
<td>Laboratory specialists</td>
<td>21/21</td>
<td>Uganda SRL/Global fund regional Lab TB project</td>
<td>Zambia</td>
</tr>
<tr>
<td>Laboratory based surveillance</td>
<td>Practical laboratory training</td>
<td>laboratory and Surveillance teams and Environmental officers</td>
<td>42/42</td>
<td>EAPHLNP</td>
<td>Malawi</td>
</tr>
<tr>
<td>Laboratory quality management systems</td>
<td>Laboratory workshop TA training</td>
<td>Laboratory experts</td>
<td>38/38</td>
<td>ASLM</td>
<td>Zambia and Malawi</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pandemic preparedness and response</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>THIRA</td>
<td>Organised workshop with practical exposure</td>
<td>Multidisciplinary and multisectoral disease surveillance teams</td>
<td>130/130</td>
<td>Africa CDC</td>
<td>130/130 Africa CDC Lesotho/ South Africa (cross border)</td>
</tr>
<tr>
<td>Training program</td>
<td>Mode of training</td>
<td>Cadre trained</td>
<td>Numbers trained/target</td>
<td>Collaborating partner</td>
<td>Countries covered</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>---------------------------------------</td>
<td>------------------------</td>
<td>------------------------</td>
<td>-----------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Research methodology and scientific writing</td>
<td>Organised workshop with practical exposure</td>
<td>Health personnel/research teams</td>
<td>16/16</td>
<td>Union/UNZA</td>
<td>All project countries</td>
</tr>
<tr>
<td>Development and implementation of operational research studies</td>
<td>Coaching and mentorship</td>
<td>Health personnel/research teams</td>
<td>16/16</td>
<td>Union/UNZA</td>
<td>All project countries</td>
</tr>
<tr>
<td>Website content management (Drupal)</td>
<td>Organised workshop with practical exposure</td>
<td>ICT and communication officers</td>
<td>12/12</td>
<td>Consultant web developer</td>
<td>All countries</td>
</tr>
<tr>
<td>Principles of mine inspection and risk assessment</td>
<td>Organised workshop with practical exposure</td>
<td>Mine inspectors</td>
<td>60/16</td>
<td>NIOH and Workplace Health Without Borders</td>
<td>Mozambique and Malawi</td>
</tr>
<tr>
<td>Measurement of hazardous chemical substances and risk assessment</td>
<td>Organised workshop with practical exposure</td>
<td>Occupational hygienists</td>
<td>22/36</td>
<td>Workplace Health Without Borders</td>
<td>All countries</td>
</tr>
<tr>
<td>Basic occupational health principles focusing on medical surveillance and compensation</td>
<td>Organised workshop with practical exposure</td>
<td>Medical doctors and nurses</td>
<td>24/16</td>
<td>MBOD</td>
<td>Lesotho</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>579/555</strong></td>
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</tbody>
</table>
Annex II: Progress in performance indicators

The Annual report for January to December 2019, shows that the project has achieved the targets for three out of five (60 percent) project outcome indicators, and for 12 out of 15 intermediate outcome indicators (80%). Overall, the project achieved annual targets for 15 out of 20 project indicators equivalent to 75 percent performance.

<table>
<thead>
<tr>
<th>Project outcome indicators (POI)</th>
<th>Regional Targets for 2019</th>
<th>Regional Achievements 2019</th>
<th>% Achievements</th>
</tr>
</thead>
<tbody>
<tr>
<td>POI# 1. TB case notification in target geographic areas</td>
<td>96,657</td>
<td>99,415</td>
<td>103%</td>
</tr>
<tr>
<td>POI# 2. TB Treatment success rate in target geographic areas: All (i) New and (ii) Relapse TB cases (Percentage)</td>
<td>89%</td>
<td>87%</td>
<td>98%</td>
</tr>
<tr>
<td>POI# 3. TB cases identified through active TB case finding (screening) among TB vulnerable population in target geographic areas (Number)</td>
<td>21,461</td>
<td>11,523</td>
<td>54%</td>
</tr>
<tr>
<td>POI# 4. Project supported laboratories compliant with regionally harmonised SOPs for surveillance of MDR-TB</td>
<td>84</td>
<td>105</td>
<td>125%</td>
</tr>
<tr>
<td>POI# 5. Direct beneficiaries (Number), and the share of females among them (percentage) - (all diseases within health facilities including TB).</td>
<td>965,661</td>
<td>22582723</td>
<td>2,339%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intermediate outcome indicators (POI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOI# 1. Proportion of MDR-TB patients in target geographic areas benefitting from psychosocial OR nutritional support during the treatment period</td>
</tr>
<tr>
<td>IOI# 2. Proportion of miners eligible for compensation due to occupational diseases actually receiving it</td>
</tr>
<tr>
<td>IOI# 3. Proportion of TB patients satisfied with TB services as per patient exit surveys or “drop box” feedback in target geographic areas</td>
</tr>
<tr>
<td>IOI# 4. Percentage of HIV patients routinely screened for TB in targeted geographic areas in the four participating countries</td>
</tr>
<tr>
<td>IOI#</td>
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