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STATE OF TUBERCULOSIS IN THE SADC REGION, 2010

ORIGINAL IN
ENGLISH

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ACRONYMS AND ABBREVIATIONS

ACSM	Advocacy, Communications and Social Mobilization
ADB	African Development Bank
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
CDC	Centers for Disease Control and Prevention
CPT	Cotrimoxazole Preventive Therapy
DOT	Directly Observed Therapy
DOTS	Directly-Observed Treatment, Short-course: the internationally recommended strategy for TB control
DRS	Drug Resistance Surveillance or Survey
DST	Drug Susceptibility Testing
EQA	External Quality Assurance
FDC	Fixed-Dose Combination (or FDC anti-TB drug)
FIDELIS	Fund for Innovative DOTS Expansion, managed by IUATLD
FIND	Foundation for Innovative New Diagnostics
GDF	Global TB Drug Facility
GLC	Green Light Committee
Global Plan	The Global Plan to Stop TB, 2006–2015
GNI	Gross National Income
HIV	Human Immunodeficiency Virus
HTC	HIV testing and counselling
IPT	Isoniazid Preventive Therapy
MDG	Millennium Development Goal
MDR	Multidrug Resistance (Resistance to, at least, Isoniazid and Rifampicin)
MDR-TB	Multidrug Resistant Tuberculosis
MS	MemberState(s)
NRL	National Reference Laboratory
NTP	National Tuberculosis Control Programme or equivalent
PIHTC	Provider initiated Testing and Counselling (for HIV)
RCE	Regional Centre of Excellence
RISDP	Regional Indicative Strategic Development Plan
SADC	Southern Africa Development Community
SATCI	Southern Africa TB Control Initiative
SNRL	Supranational Reference Laboratory
TB	Tuberculosis
TB CAP	Tuberculosis Control Assistance Program
The Union/IUATLD	International Union Against Tuberculosis and Lung Disease
UNAIDS	Joint United Nations Programme on HIV and AIDS
UNITAID	International Facility for the Purchase of Drugs to Treat HIV and AIDS, Malaria and TB
WHO	World Health Organization
XDR-TB	Extensively Drug Resistant TB: TB due to MDR strains that are also resistant to a fluoroquinolone and at least one second-line injectable agent (amikacin, kanamycin and/or capreomycin)

Executive Summary

1. The tuberculosis burden in the SADC Region remains very heavy. Southern Africa is still the epicentre of the dual epidemic of HIV and AIDS and Tuberculosis, so the tuberculosis epidemic of the last two decades in these Member States has been HIV-associated. This has led to the Member States having collectively and individually the highest proportion of TB patients co-infected with HIV in the African Region as well as the world.

2. WHO uses modelling techniques to estimate TB incidence in Member States. These estimates indicate that the SADC region also has the largest collection of countries with the highest TB incidence (see Fig 1), with ten SADC Member States recording more than 300 cases per 100,000 inhabitants.[1]

3. From country reports, Seven Member States have recorded notification rates above 300 cases per 100,000 population in new cases in 2010, while five have rates of between 100 and 200 per 100,000. The figures are close to those of 2009. This shows consistency in reporting by Member States and illustrates that as expected the TB situation will not change in the short term.

4. This TB epidemic appears to have matured in most of the Member States, and these reached their peak TB notifications in the 90s or 2000s. However, as of 2010, two Member States have not yet demonstrated a peak (Lesotho, Mozambique) and therefore still show an upward trend. South Africa and Swaziland, which were still showing an upward trend in 2009, have a lower notification rates in 2010 than in 2009. This may indicate that their rate has peaked in 2009 but more years are needed to show if this is the case.

5. The percentage of TB cases which are co-infected with HIV is also very high in all the Member States except in Mauritius and Seychelles. The co-infection rates range from 1% in Angola to 80% in Swaziland. Nine states have co-infection rates above 50% and eight have co-infection rates of 60% and above. Twelve MSs have tested more than 50% of the TB cases notified in 2010 for HIV, exceptions being Angola and DRC.

6. MDR-TB cases have been reported in all SADC Member States, except Seychelles which has a low TB burden. All MS have conducted or are planning Drug Resistance Surveys, with the exception of the low burden MSs of Mauritius and Seychelles, and one high burden MS, viz., Angola. Most of the high burden Member States have support for 2nd line drugs from donors, with GLC approval, and from their Governments.

7. Only six Member States have ever reported XDR-TB cases, viz. Botswana, Lesotho, Mozambique, Namibia, Swaziland and South Africa. It is doubtful if the figures are reflective of the actual situation on the ground, for both MDR and XDR, because of the limited capacity for diagnosis. While most Member States can do Culture and DST for 1st line TB drugs, only South Africa and DRC can do DST for 2nd line drugs.

8. Member States have expressed their desire to have the SADC TB Report cover the subject of Mining and TB in Member States. This report has included a section reviewing the historical aspects of this subject and possible activities for the future.

9. The performance of National Tuberculosis Programmes (NTP's) remains low in most Member States, as measured by successful outcomes based on the DOTS cohort analysis. Only seven MSs have achieved the required success rate of 85% (DRC, Malawi, Mauritius, Mozambique, Namibia, Tanzania and Zambia). Only Mozambique and Namibia which in the 2008 cohort had just fallen short of the target 85% have joined the list of those achieving the target in the 2009 cohort. The rest of the Member States' performance remains poor in that regard.

10. Default rates remain high. For default rates in cases registered in 2009, six MSs (Angola, Botswana, Namibia, South Africa, Swaziland and Zimbabwe) registered defaulter rates of 5% and above (Botswana and Namibia had registered less than 5% in the 2008 cohort, therefore indicating a little deterioration). Eight MSs have maintained defaulter rates of less than 5% (DRC, Lesotho, Malawi, Mauritius, Mozambique, Seychelles, Tanzania and Zambia). Defaulting is a very important source of drug resistant- tuberculosis, and it is essential that Member States take particular steps to bring down default rates. It is also recognized that Drug Resistant mycobacteria are also being transmitted by patients.

11. Case fatality remains high in some Member States: In the 2009 cohort, eight MS registered particularly high case fatality rates of 8% or more. With the exception of Botswana and Namibia, these were the same MS that registered fatality rates of 8% or more in 2008. This should not be so with the availability of TB treatment as well as anti-retroviral therapy in all Member States.

1 *WHO 2011: Global Tuberculosis Control 2011.*

12. Data suggests that with the exception of Angola, Lesotho, Mauritius and South Africa the SADC Member States have achieved the microscopy coverage of 1 centre to 100,000 population. Most of the countries have also achieved the required level of one Culture and Sensitivity centre for 5 million population. Only the countries with high population have not achieved that level Angola, DRC, Mozambique, Tanzania and Zimbabwe. MSs that still have a large proportion of their pulmonary cases not diagnosed by sputum microscopy need to attend to the situation.

13. Member States are also actively consolidating their responses to the new challenges of HIV/TB Collaborative activities, and the response to the emergence of MDR/XDR-TB. The report outlines what they are doing in this regard, such as the implementation of the 3i's in the former, and the securing of appropriate 2nd line drugs in the latter. MS are all implementing TB/HIV Collaborative Activities on the basis of the 2004 WHO Interim Policy, but are all at different levels in the implementation of the various mechanisms.

14. With regard to financing, most Member States that have provided financing data have shown the political will to fund their National Tuberculosis Programmes, either directly by Government funding or by mobilizing funds from donors. Because some MSs do not have specific budget lines for TB, they have not provided the data requested for this report. Eight MS have provided data and five of them have indicated the gap in their funding, ranging from a low of 7% and 12% in the middle income countries of Botswana and Swaziland to 70.5% in the low income country of DRC. Government contribution varies in a similar way.

15. The SADC Secretariat has continued to advance the agenda for the promotion of harmonization and advocacy based on the SADC Regional Indicative Strategic Development Plan since Member States have now adopted The SADC Framework for the Control of Tuberculosis which covers the period 2007-2015. The Secretariat is in the process of implementing the strategic approaches of the Framework.

16. The recommendations of this report follow up on those of the 2009 report. It is recommended that the SADC Secretariat continues with its advocacy with WHO for prevalence surveys in Member States not included in the initiative, assists MS in mobilizing funds for TB programmes from Global Health Initiatives and implement the monitoring mechanisms for the various SADC Frameworks related to TB, including the core indicators that are now operational.

17. At country level, recommendations in the past referred primarily to the need to strengthen DOTS implementation to improve indicators of programme success. . Improvements are still very weak, and therefore this report continues to emphasize the strengthening of implementation of the various DOTS components. Human resources, in both quality and number, and financial resources are the two areas where MS need to lay most emphasis.

1. Introduction

The SADC TB Report is an annual document that aims to provide the Ministers of Health of the Community, the Secretariat and the partners with an overview of the state of the disease and its control in the Region. It gives the state of progress towards Regional, Continental and Global commitments by both the SADC and the Member States, and constitutes a monitoring tool for the implementation of the SADC Framework for the Control of Tuberculosis which covers the period 2007-2015.

This current report is based on the core indicators that have been developed by the SADC Secretariat and is for the year 2010. The following section, entitled "Background", gives an outline of what the report covers.

2. Background

The report starts with the state of the disease in the region and thereafter covers the state of control, and concludes with recommendations to the SADC Secretariat and to Member States. Section 4 of the report gives an overview of the burden of TB in the SADC Region. Southern Africa remains the epicentre of the dual epidemic of Tuberculosis and HIV. Nine Member States of the Southern African Development Community (Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe) account for almost 50% of the global burden of HIV-associated tuberculosis[2]. This burden of the two diseases in Southern Africa becomes more apparent when the per capita rates are shown later in this report. It is widely documented and acknowledged that tuberculosis is a leading cause of death in people with HIV infection, and this is well recognized in the SADC Region. HIV has exacerbated the tuberculosis epidemic globally, and among the SADC Member States, which are the epicentre of the epidemic, it was responsible for an upswing in both notification rates and case fatality rates. This report will show that case fatality rates remain high in some MS despite the availability of ART in addition to TB treatment.

Mining is known to have had a role in the early spread of TB in some SADC Member States, especially in the late 19th century and early 20th century. This early spread was associated particularly with massive labour migration to South African mines from the rest of the region. There is evidence that mining continues to influence the epidemiology of TB in the MSs, especially those that still experience migration to South African mines. As mining is a very important economic activity in several MSs, and this is likely to be impacting on TB epidemiology, the report introduces the subject of mining and TB so that the subject can be dealt with in subsequent reports.

Section 5 analyses the progress towards TB control made in the SADC Region. The Member States of SADC are committed to the global strategies aimed at TB control. The DOTS strategy has been implemented in most SADC Member States since the early 1990s and has enabled systematic treatment of patients with TB with some impressive results where the implementation has been efficient. The Member States are also party to the Stop TB Strategy that came into effect in 2006. The Stop TB Strategy has incorporated DOTS, but also deals with new problems, especially the TB/HIV problem and the MDR/XDR problem. It is designed to meet the TB-related Millennium Development Goal as well as the TB Partnership targets set for 2015.The Abuja Call for Accelerated Action towards Universal Access to HIV and AIDS, Tuberculosis and Malaria Services of 2006, otherwise known as the Abuja Declaration, is an important Continental declaration of the AU to which SADC Member States subscribe. SADC Member States have adopted several protocols aimed at harmonizing the response to the two diseases of the dual epidemic- TB and HIV and AIDS. These are also discussed in Section 3.

Section 6 tackles the issue of policies for TB control in SADC as well as programme gaps and challenges. It highlights that while policies on the whole are strong in the Member States, programme implementation remains a big challenge, resulting in less that optimal outcomes in most of the Member States. The challenges are summarized in this section, and recommendations are made to deal with the issues that are behind the challenges.

3. Methodology

This report is based mainly on a desk study and self-reports from the Member States of SADC. Guidelines for reporting in a predetermined format were circulated to Member States. These guidelines took into consideration the approved SADC core indicators that have been formulated by the SADC secretariat. Member States therefore submitted reports according to the format proposed by the SADC Secretariat. For the 2010 report a new format for the reports was introduced, together with a data collection tool to facilitate the production of data tables. A Map has been adopted from WHO, and a few tables constructed from data sourced from WHO reports. Generally, where data from other sources has been used, or quotations, the source of the information has been quoted.

2 *Harries, A D et al. The HIV-associated tuberculosis epidemic-when will we act. The Lancet.Tuberculosis. May 2010*

Case fatality figures have been used instead of mortality rates because MSs have no figures on mortality and depend on WHO global estimates. Case fatality rates are obtained from MSs cohort reports. Case detection rates figures have not been used in the report as they are also based on estimates by WHO from modelling and are not of practical use to the report.

The initial draft was discussed at the meeting of National TB Programme Managers where proposals for changes as well corrections to data were made. These were incorporated in the final report. It was also presented to the Partners who met after the Programme Managers meeting for information. The draft final report was then sent to Member States for their inputs.

The main limitation of the process is that the data is self-reported by Member States. While this may result in the usual problem of some states giving a more optimistic picture of their situation, an attempt was made to alleviate this problem, where possible, by cross-checking the figures with those submitted to the World Health Organization and appearing in their reports, specifically the Global Tuberculosis Control 2010. WHO was also represented at the National TB Programme Managers meeting that discussed the draft report and the Partnership forum that followed. Consistency with previous years' figures, where they were available, has also helped to assess the plausibility of the data to indicate the level of accuracy.

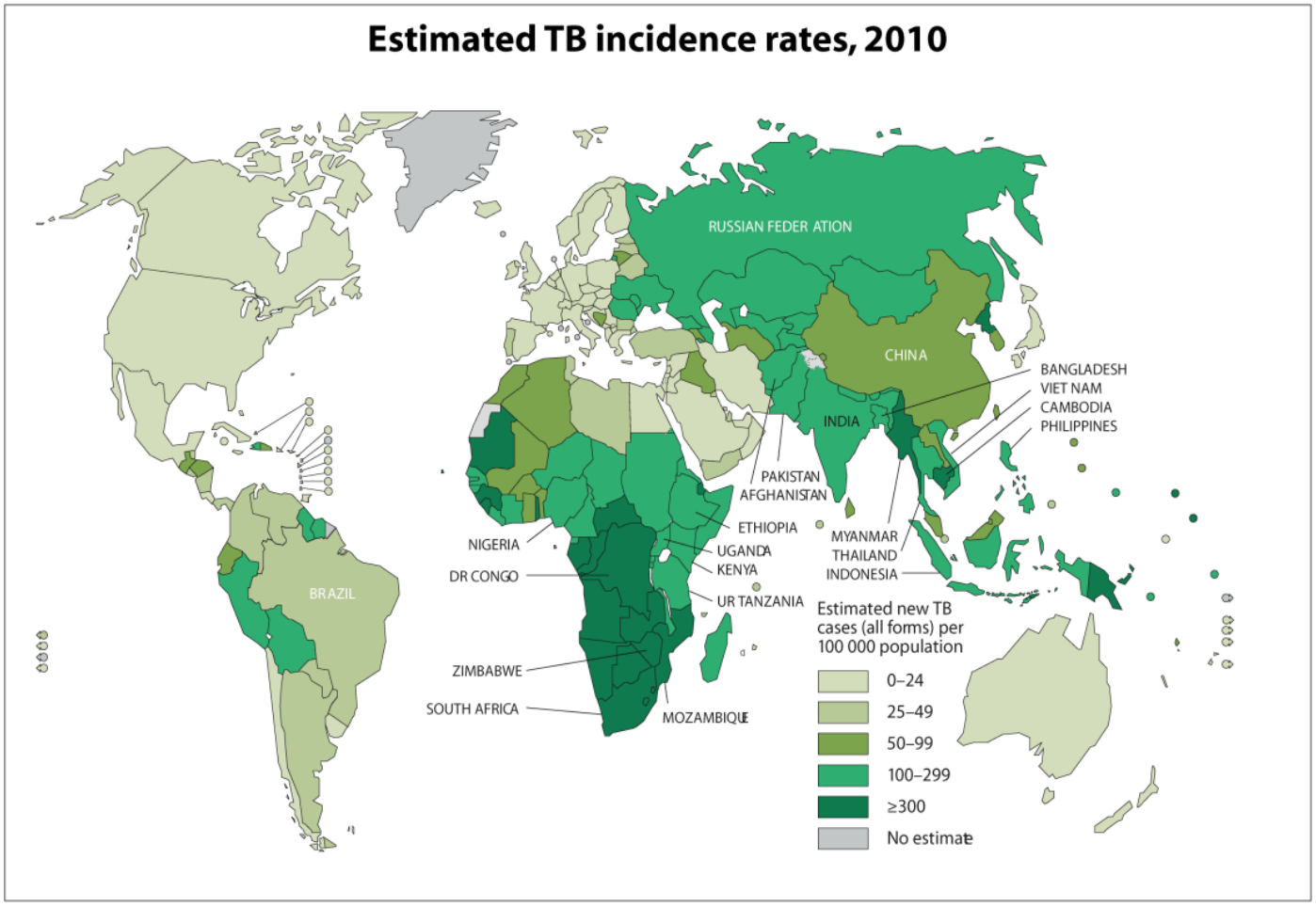
4. Overview of the TB burden in the SADC Region

4.1 Level and trends in Tuberculosis in SADC

The SADC Region continues to be the epicentre of the dual epidemic of Tuberculosis and HIV and AIDS, with SADC Member States registering the highest per capita burden of both diseases in both the world and in the African Region of WHO. The current Tuberculosis epidemic of the SADC Region, which started in the 1980s, was driven by the HIV epidemic. This has led to the Member States having collectively and individually the highest proportion of TB patients co-infected with HIV in the African Region as well as the world. WHO periodically estimates the incidence of TB in countries around the world, using modelling techniques, and publishes the results. According to these estimates, the SADC region also has the largest collection of countries with the highest TB incidence (see Fig 1), with ten SADC Member States recording more than 300 cases per 100,000 inhabitants.[3] Note that according to WHO the global incidence rate of TB fell to 128 per 100,000 in 2010[4].

3 *WHO 2011: Global Tuberculosis Control 2011.*
4 *WHO 2010: 2011/2012 Tuberculosis Global Facts (launch of Global Tuberculosis Report 2011)*

Fig 1 Estimated TB incidence rates by country, 2009



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

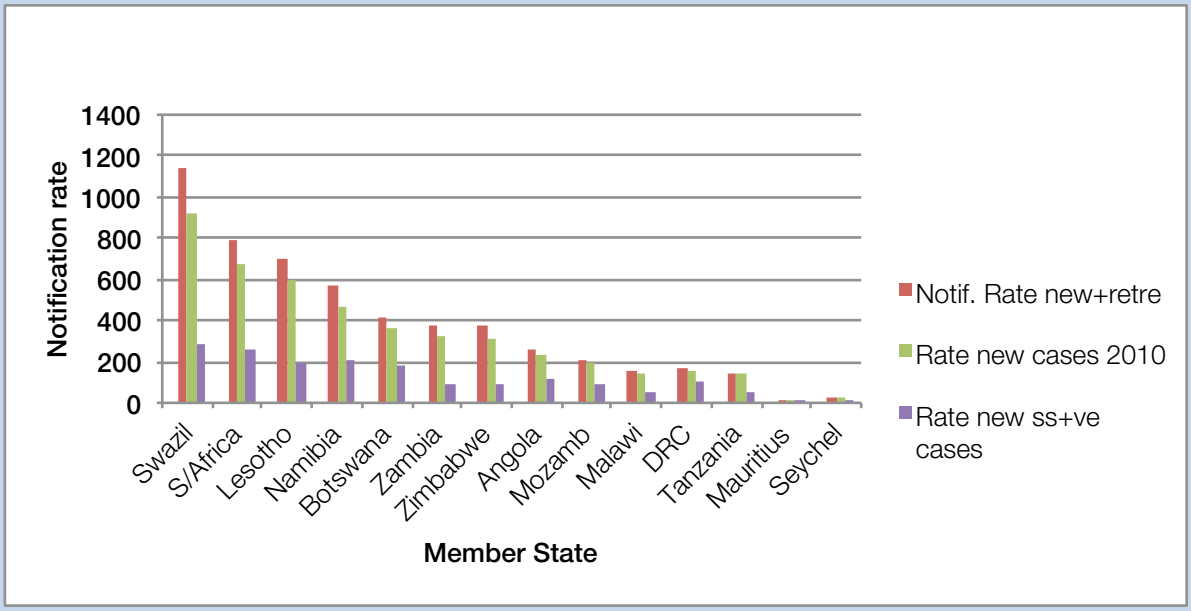
Source: *Global Tuberculosis Control 2011*. WHO, 2011.

World Health Organization

Source: WHO 2011: Global Tuberculosis Control 2011

Member States use notification rates (cases actually detected and notified) as one of the measurements of disease burden, and these can be compared with the incidence rates estimates generated by WHO. Figure 2 shows the notification rates recorded by the SADC Member States in 2010. The ranking in terms of burden remains more or less the same as in 2009, with little change in the actual figures.

Fig.2 Burden of TB in SADC Member States 2010; Notification rates: New and Retreatment Cases, New Cases and new SS+ve cases per 100,000

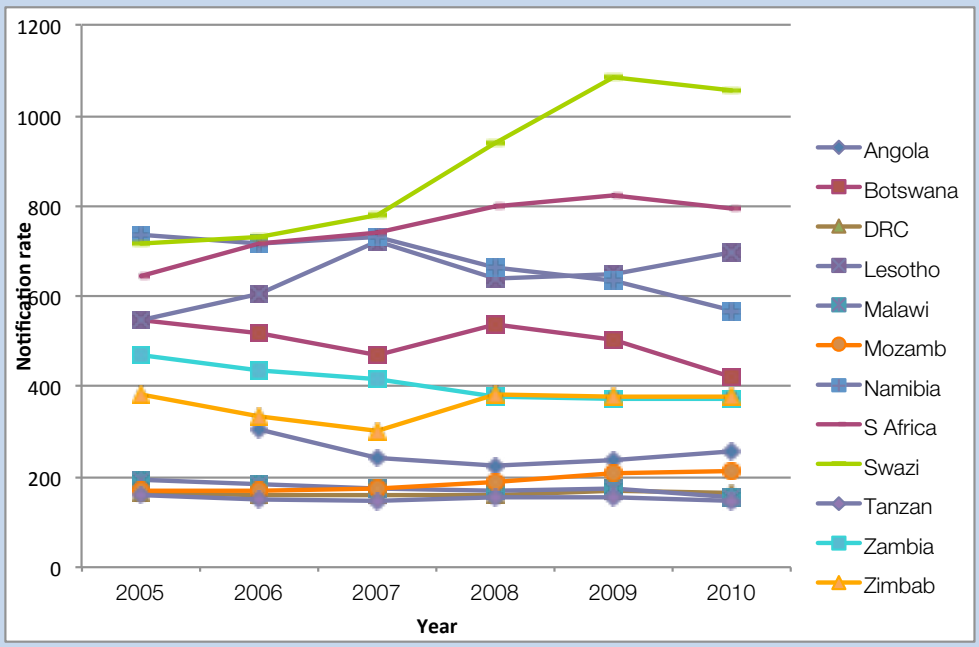


Source: Member States reports to SADC Secretariat

Notification rates of more than 300 new cases per 100,000 were recorded in seven Member States. Five Member States recorded rates between 100 and 250 new cases per 100,000. Only two Member States reported much lower rates viz., Mauritius and Seychelles. The SADC Region therefore has Member States that record the highest notification rates in the world, illustrating a very heavy disease burden indeed.

Figure 3 shows the trend of Tuberculosis in the high-burden SADC Member States in the six years spanning 2005 to 2010.These are the countries which were particularly hard hit by the HIV-associated TB epidemic. Angola, Botswana, DRC, Malawi, Namibia, Tanzania, Zambia and Zimbabwe show a levelling off of cases in the five years with some decline noticeable in some of them. Lesotho and Mozambique still have an upward trend indicating that the TB epidemic has not yet reached its peak. The former group of countries therefore have reached their peak of HIV-associated TB, while the latter group are still to reach their peak. Swaziland and South Africa, which were showing an upward trend up to the 2009 report, have both demonstrated a drop in 2010, which may indicate that they have both now reached their peak, but this can only be confirmed as a trend after a few years.

Fig 3. Six year trend (2005-2010) in TB notifications in high-burden SADC Member States(Total notifications per 100,000)



Source: Member States reports to SADC Secretariat

The percentage of sputum smear positive cases among the notified new pulmonary cases, the most important group epidemiologically because of their role in transmitting infection, ranges from 31% in Swaziland to 95.5% in Mauritius. This wide range is likely to be due to several factors, the most important being the atypical presentation of TB in HIV infected individuals, where there are more cases of smear negative pulmonary cases, and the fact that in some countries a proportion of pulmonary cases do not have a sputum smear examination. In six MS the percentage of smear positive cases among the notified new pulmonary cases is less than 50% (Lesotho, Malawi, South Africa, Swaziland, Zambia, Zimbabwe). This means that Member States have to give particular emphasis to implementing the policy, which they all subscribe to, of ensuring that all pulmonary tuberculosis suspects undergo a sputum examination. It also supports the case for adoption of new technologies in sputum microscopy and culture.

4.2 TB Mortality (Case Fatality Rates)

Because of the limited capacity of individual SADC Member States to estimate TB mortality, they rely on estimates made by WHO. The WHO estimates of mortality rates from TB are based on modelling and give very wide ranges. For example, for 2009, the TB mortality rates in SADC are given as ranging from <1 per 100,000 population (<1-1.3) in Mauritius to 82 per 100,000 (59-109) in Zimbabwe. More examples are Tanzania 9 (range 3.4-21), Botswana 57 (36-84), South Africa 45 (20-88).[5] They are therefore not useful for this report.

Case fatality rates are reported yearly by Member States in their cohort analysis which is part of the Monitoring and Evaluation in DOTS. Case fatality in the TB and HIV high burden countries went up considerably during the HIV epidemic. However it should now show decrease with access to Anti-Retroviral Therapy. Currently the case fatality rates show quite a wide spread in SADC. The Member States with a high case fatality rate should re-examine the reason for this as this means that the impact of anti-retroviral access to TB patients is not yet realized. Case fatality rates of TB cases are also a reflection of the effective implementation of the National Tuberculosis Programmes. Table 1 below shows the spread of case fatality in the Member States for the cases registered in 2009.

5 *WHO Report: Global Tuberculosis Report 2010*

Table 1 Case fatality in TB cases registered in 2009 in SADC Member States

0%-<5% (Low)	5%-<8% (Medium)	8% + (High)
DRC	Tanzania	Botswana
Mauritius		Lesotho
Seychelles		Malawi
		Mozambique
		Namibia
		South Africa
		Swaziland
		Zimbabwe

Source: Member States' reports

4.3 The Gender Dimension

In the natural history of Tuberculosis a male preponderance has always been demonstrated, especially in high burden populations. In these cases, most cases are in adults. It has been suggested that in countries that have borne a heavy burden of HIV, and the fact that in those countries females tend to have a higher burden of HIV than males, the females will therefore have a higher burden of Tuberculosis.[6] The figures from SADC Member States however suggest that despite the Region having the highest burden of HIV in the world, there is still a higher preponderance of TB in males, although at a much reduced level. Table 2 below shows that only Lesotho and Swaziland have registered more female than male TB cases, the latter in new smear positive cases only.

Table 2 Male: Female ratio of TB Cases in SADC Member States

Country	M:F ratio All new cases	M:F ratio New SS+ve cases
Angola	n/a	1:1
Botswana	1.27:1	1.32:1
DRC	n/a	1.19:1
Lesotho	n/a	0.8:1 (at age 55-64)
Malawi	1.32:1	n/a
Mauritius	2.32:1	2.60:1
Mozambique	n/a	n/a
Namibia	n/a	n/a
Seychelles	n/a	n/a
S. Africa	1.09:1[7]	1.19:1
Swaziland	1.01:1	0.99:1
Tanzania	1.71:1	n/a
Zambia	1.42:1	1.59:1
Zimbabwe	1.06:1	1.14:1

Source: Reports from MSs to SADC Secretariat

6 *Marais BJ, Gupta A, Starke JR, El Sony A. Tuberculosis in women and children.The Lancet.Tuberculosis. May, 2010.*
7 *Refers only to new pulmonary cases*

4.4 The TB/HIV Epidemic

All SADC Member States test their TB patients for HIV as part of TB/HIV collaborative activities. The percentage of TB cases tested for HIV however varies considerably between the countries. Table 3 shows that the percentage tested in the cases notified in 2010 ranges from 11.5% in Angola to 100% in Seychelles. Ten Member States have tested more than 80% of their new TB cases in 2010 for HIV, the best performance so far.

Member States are encouraged to test TB cases for HIV, as with the exception of Seychelles and Mauritius, TB in these countries is largely HIV associated.

Reported co-infection rates range from 1% in Angola to 80% in Swaziland. Angola, DRC, Mauritius, Seychelles and Tanzania have co-infection rates of less than 50%. All the other Member States have co-infection rates of more than 50%, showing the large role of HIV in driving the incidence and prevalence of TB in the countries, and the importance of TB/HIV collaborative action.

Table 3 HIV Burden in Tuberculosis patients 2010

Country	No. New TB Notifications	No. Tested for HIV	% tested	No. +ve	% +ve
Angola	42,310	4896	11.5%	458	1.0%
Botswana	6560	5216	79.5%	3384	64.9%
DRC	110,032	28,997	26%	5273	18%
Lesotho	11155	11005	83.8%	8459	76.9%
Malawi	22,536	19,855	88%	12,476	63%
Mauritius	116	110	95%	8	7.3%
Mozambique	46,174	40,554	88%	24,574	60.6%
Namibia	10,103	9534	94.3%	5227	54.8%
Seychelles	19	19	100%	2	10.5%
S. Africa	396,554	213,006	54%	128,457	60%
Swaziland	9706	5511	58%	4431	80%
Tanzania	63,543[8]	56,849	90%	21,662	38%
Zambia	48,616[9]	40,704	83%	26,571	65%
Zimbabwe	47,685	38,047	80%	28,662	75%

Source: Member States' reports

4.5 Multi Drug Resistant TB (MDR-TB) and Extensively Drug Resistant TB (XDR-TB)

Drug resistant tuberculosis is now a recognized world-wide problem. However, in the African Region, Southern Africa has recorded more cases than other sub-regions. The real extent of the problem is not known as most countries do not have the capacity to do regular or continuous drug resistance surveys, and the capacity to do Drug Susceptibility Testing (DST) for second line drugs. In the SADC region, only South Africa can do second line DST and therefore acts as the Supra-National Laboratory for almost all the countries for this work.

Data collected from Member States on drug-resistant tuberculosis is presented in Table 4 below.

8 *Shows both new and retreatment cases*
9 *Shows both new and retreatment cases*

Table 4 Drug Resistance burden (MDR/XDR) 2010

Country	No. MDR cases detected 2010	Cumulative MDR cases	No. on treatment	No. XDR cases detected 2010	Cumulative XDR cases	Years Drug Resistance Surveys conducted	Source of drugs for treatment Gvt/GF/ Donors
Angola	3	7	7	0	0	-	Gvt
Botswana	107	461	92	2	5	1995, 1999, 2002, 2008	Gvt
DRC	96	189	159	0	0	2004	Gvt
Lesotho	132	527	117	0	3	2008	UNITAID, GF
Malawi	40	144	33	0	0	2010-2011	GF
Mauritius	2	0	2	0	0	-	Gvt
Mozambiq		505	199	0	2	2007-8	Donors
Namibia	214	806	214	8	48	2008-9	Gvt
Seychelles	0	0	0	0	0	-	Gvt
S. Africa[10]	7,386	16,456	5,402	511	978	2001	Gvt
Swaziland	326	776	541	4	9	2009	Gvt, GF
Tanzania	77	157	33	0	0	2007	GF/GDF
Zambia	43	-	43	-	-	2007-8	Gvt, GF
Zimbabwe	33	56	27	0	0	planned	GF, CDC, MSF, WHO, TB Care

Source: Member States' reports

Most Member States have done Drug Resistance surveys. Those that have not yet done these surveys (Angola and Zimbabwe among the high burden countries) are encouraged to do them. For low burden countries (Mauritius and Seychelles) this is not so essential. Most of the Member States detecting drug-resistant TB are now offering treatment and have developed plans approved by GLC.

4.6 Tuberculosis and Mining in Southern Africa

Historical evidence suggests that the spread of TB in Southern Africa was facilitated by the massive labour migrations that followed the opening of mines in South Africa in the latter half of the 19th century.[11] The evidence also suggests that TB prevalence was either very low or the disease did not exist in the tribes of Southern Africa before widespread European immigration.[12] It is apparent that living conditions in the mines, especially the gold mines, were so poor that many African miners contracted TB and then took it back to their communities. The migrant labour system operated far beyond the borders of South Africa, with large numbers of workers recruited from most of what are now SADC countries.

10 *Cumulative cases refer to 2009-10 only*

11 *Kleeberg, H.H. (1979): Review of the past and present TB situation in South Africa: Paper presented at the National Tuberculosis Conference, Pretoria, June 1979*

12 *The South African Institute of Medical Research (1932). Report of the Tuberculosis Research Committee on Tuberculosis in South African Natives with Special Reference to the Disease amongst the Mine Labourers on the Witwatersrand.*

The recruitment system covered Botswana, Lesotho, Swaziland, Namibia, Mozambique, Zimbabwe, Zambia, Malawi, and Angola. Tanzania contributed workers from 1930 to 1965.Contract labour to South African mines from these countries between 1920 and 1990 ranged from 99,950 to 192,004, with a peak of 265,143 in 1970.[13]

The Chamber of Mines operated the migrant labour system through an agency called WENELA (Witwatersrand Native Labour Association), which later evolved to TEBA (The Employment Bureau of Africa). For countries close to South Africa there was the NRC (Native Recruitment Corporation), later named MLO (Mine Labour Organization). The role of mining in the establishment and spread of TB in Southern Africa was generally acknowledged, and this explains why South Africa is the only country that recognizes TB as an Occupational disease- the traditional definition of an Occupational disease is that it is a disease that is exclusively caused by that particular occupation. It should be noted that TB chemotherapy only came into widespread use in the 1950s. Therefore patients who contracted TB in the mines before that were simply sent back to their villages to die, resulting in them infecting a large number of people.

By 2000, when external recruitment had slowed down, most foreign workers in South African mines were from Lesotho and Mozambique, each contributing about 57,000, while the rest had fallen to a few thousand each.

The figures below show the number of external migrants employed in the South African mining sector for the years 2008 to 2010. Although there is a progressive decline of external migrants, their numbers are still significant, especially from Lesotho and Mozambique.

Year	Swaziland	Mozambique	Lesotho	Botswana	Non-RSATotal (%)	RSATotal[14]
2008	**6397**	**43004**	**42851**	**2654**	**94906 (50%)**	**187516**
2009	**5855**	**39090**	**38559**	**2357**	**85861 (34%)**	**168109**
2010	**5009**	**35782**	**35179**	**2042**	**78012 (34%)**	**152486**

In South Africa It is now generally acknowledged that TB is closely linked to mining, particularly gold mining. This is due to several factors, including silica dust exposure and the HIV and AIDS epidemic in the country and sub region. TB rates can be three times higher in those with silicosis. TB rates in South African miners have been found to be up to 4.45 times higher in individuals with HIV compared to those that are HIV negative and HIV infected miners with TB had a 2-5 times greater chance of recurrence from re-infection than HIV negative ones.[15] Rates of HIV and AIDS were likely to vary depending on the commodity (gold, platinum), migrancy of workforce and other socio-economic factors. HIV and AIDS rates seemed higher in the gold sector due to higher numbers of migrant labourers. Estimates (HIV prevalence) by companies ranged from just over 15% in coal, to above 25% in gold. This is compared to the South African adult prevalence rate of 17.8%. The high TB incidence in the mining sector and the failure to control tuberculosis in South Africa, Lesotho, Swaziland and Mozambique is associated to some degree with the high dependence of the mining sector on migrant labour. In 2010, almost 34% of the workforce in the mining sector was external migrants.

According to a position paper by the South African Department of Health[16], the migrants, both internal and external, working in the South African mines have established a pattern of 'oscillating migration', where migrants move between urban and rural areas and across borders. As a result, the TB acquired in the mines has the potential to fuel TB transmission in the worker's home region through oscillating migration and vice versa. Oscillating migration in the South African mines has been shown to perpetuate the TB epidemic in Lesotho. Lesotho has the fourth highest TB incidence rate in the world, and tuberculosis is responsible for 15% of all deaths in that country. The relationship between the South African mining sector and the TB epidemic in Lesotho is unambiguous – a recent study showed that close to 40% of adult male TB patients in three of Maseru's main hospitals were working, or had formerly worked, on South African mines. Furthermore, at least 25% of the drug-resistant TB cases treated in Lesotho since August 2007 had a history of work in the mines or were referred directly from the mines in SA.

13 *Godfrey Kanyenze (Dr), Director, Labour and Economic Development Research Institute of Zimbabwe (LEDRIZ), Nairobi, 15-17 March 2004 (African Migrant Labour Situation in Southern Africa)*

14 *Figures from TEBA quoted by Zungu in position paper (see footnote no.14)*

15 *Chamber of Mines (August 2011). CURRENT STATUS REGARDING TB, HIV AND AIDS AND SILICOSIS IN THE SOUTH AFRICAN MINING SECTOR*

16 *Zungu, M. (2011). TUBERCULOSIS, HIV AND MIGRATION IN THE MINING SECTOR IN SOUTH AFRICA: Draft position paper on behalf of the South African Department of Health Committee on TB in the Mining Sector and Migration*

The mining industry, particularly gold, has a high prevalence of occupational TB which is fuelled by silica dust exposure as well as high rates of HIV. There is a distinction between publicly acquired and occupationally acquired TB. Occupational TB is all TB deemed to have been acquired because of the person's occupation, e.g. risk work and health professionals. In a circular to the mining industry dated 10th March 2010,[17] the Chamber of Mines Health Policy Committee reminds the addressees that The Mine Health and Safety Act no. 29 of 1996, (MHSA) as amended, defines 'occupational disease' as any health disorder including a compensable disease as contemplated by the Occupational Diseases in Mines and Works Act (ODMWA), and the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993(COIDA). Health is defined as "occupational health at mines". Section 36A(1) of ODMWA provides that "The owner of a controlled mine or a controlled works shall from the date of commencement of a compensable disease pay the legitimate and proven cost incurred by or on behalf of a person in his or her service, or who was in his or her service at the commencement of a compensable disease, in respect of medical aid necessitated by such disease."

The circular also states that Mines and works which do not expose employees to occupational TB have publicly acquired TB. As TB is a public health hazard, collaboration by mining companies with the public health service and other stakeholders is critical in the management of TB as there is movement of persons between the mining environment and the general public. All efforts should be made to ensure that patients are not lost to follow-up and there should be appropriate referral of patients with TB between the mining health services and other health services, e.g. the public health sector. Under ODMWA, TB is a compensable disease when, "in the opinion of the certification committee, was contracted while the person concerned was performing risk work, or ...was already affected at any time within the twelve months immediately following the date on which that person performed such work for the last time." Miners who suffer from TB are compensable in two instances. First, where they lose earnings and second, where there is impairment of lung function.

This explains why South Africa is unique in classifying TB as an occupational disease.

Despite all the interventions, the impact on the TB situation in the mines has been inadequate, with TB being seen as "exported" from the mines (mainly in South Africa) to other parts of the SADC region - particularly to those countries bordering South Africa. This sparked a "Call for action" at a meeting of the STOP TB Partnership Coordinating Board held on the 14th and 15th October 2010 in Sandton[18]. The meeting called for urgent action by the Department of Health and those responsible for mines and the mining sector in South Africa, acting in concert with counterparts in Lesotho, Swaziland and Mozambique, as well as the rest of SADC, to undertake the necessary interventions.

The TB interventions were proposed in the following areas, with special emphasis on migrant workers in the mining sector:

- Coordination on strategy, policy and legislation: TB control and management in the South African mines require closer collaboration on strategy, policy and legislation among the four key Government Departments, viz., Health, Mineral Resources, Labour and Home Affairs.
- Surveillance: The mining sector reports occupational TB data to both the Departments of Health and Mineral Resources, while non-occupational TB is reported to the DOH only. This creates challenges to government and the mining sector, as the data in most instances cannot be verified nor traced back to the index case and reporting mine.
- Programmatic intervention: Tuberculosis, HIV and Silicosis programmes for mine and ex-mine workers are fragmented and not always available to all. Their availability is mainly dependent on the motivation of the employer, size of the mine operation and availability of resources.
- Monitoring and Evaluation: Interventions for TB, Silicosis and HIV in the mining sector have been among the best and trend setting on paper, certainly in South Africa. The challenge has been the ability to collect and analyse the right indicators to monitor and review progress.

17 *Chamber of Mines of South Africa, 10th March 2010. Health Policy Circular No 13/10. PROTOCOL: OBLIGATIONS OF EMPLOYERS IN RELATION TO TUBERCULOSIS*

18 *Zungu, M. (2011). TUBERCULOSIS, HIV AND MIGRATION IN THE MINING SECTOR IN SOUTH AFRICA: Draft position paper on behalf of the South African Department of Health Committee on TB in the Mining Sector and Migration*

- Financing: The scale of the burden of TB, Silicosis and HIV in the mining sector is large and there will be a need for substantial resources to fund the interventions for migrant workers within the sector in South Africa and across borders.

Below are some of the more pertinent recommendations that came from the meeting:

- Establish a simple and sustainable cross border referral system for TB and HIV, specific to migrant workers including the identification of a focal person from the Department of Health (DOH) to manage and communicatewith labour-sending countries on cross border disease issues. It would also be important to have a communication platform between countries to allow direct referral from a mine health facility to the receiving country's health facility.
- Implement the SADC-wide single referral system which will include a named receiving facility and health care professional.
- Harmonize policies and treatment protocols throughout the SADC Region.
- Establish a unified and strengthened surveillance system for TB, silica dust and HIV.
- Improve and collect statistical data on migration.
- Employers should take full responsibility for the management of all TB cases, including post-employment.
- Identify and establish a M&E framework and structure to monitor, evaluate and improve implementation of interventions for the cross border management of miners / ex-miners with TB in the mining sector.
- Develop a single funding pool covering TB, silicosis and HIV interventions in the mining sector with a strong governance structure that will be needed to deal with the scope and scale of the programmatic interventions within the sector and across borders.

It is important that further efforts be made to improve communication between mines medical services in South Africa and the source countries for migrant labour to optimize the referral system between the two.

SADC could play an important role, in line with its health protocols, of harmonizing diagnostic and treatment regimens, and smoothing the referral system between the mines and the source countries for migrant workers. A recommendation is made in this report for future action.

5. Progress towards TB Control in the SADC Region

5.1 Tracking Progress towards Regional, Continental and Global Commitments

The DOTS Strategy has been implemented world-wide since 1991, especially in countries with a high burden of tuberculosis. However in 2005, when statistics indicated that DOTS alone would not be sufficient to achieve global TB control and elimination, the World Health Assembly recognized the need for a new strategy that would build upon and enhance the achievements of DOTS. The Stop TB Strategy was then launched in 2006. It is designed to meet the TB-related Millennium Development Goal (MDG) as well as the TB Partnership targets set for 2015.

The targets of the MDGs and the Stop TB Strategy are as follows:

- MDG 6, target 8- to have halted and begun to reverse the incidence of TB by 2015
- Targets linked to the MDGs and endorsed by the Stop TB Partnership

- By 2005, to have detected at least 70% if new sputum smear-positive TB cases and cured at least 85% of these cases
- By 2015, to have reduced TB prevalence and death rates by 50% relative to 1990 levels
- By 2050, to have eliminated TB as a public health problem (<1 case per million population).

The Member States of SADC are participating in the MDGs and in the Stop TB Strategy, and have been implementing DOTS, which is now a component of the Stop TB Strategy, since the early 1990s. Following the passing of Resolution AFR/RC 55/RS by the WHO Regional Committee for Africa at its 55th Session in Maputo in 2005, which declared TB an emergency and urged Member States to also declare TB as an emergency in their own countries, nine SADC Member States have formally declared TB an emergency. These are Botswana, DRC, Lesotho, Malawi, Mozambique, South Africa, Swaziland, Tanzania and Zambia. Despite being asked to do so, few MS have ventured to indicate what the impact of declaring TB as an emergency has been. Botswana has stated that declaring TB an emergency facilitated the integration of TB into the Health Plan, for Namibia it helped increase the focus on TB and treatment outcomes, for Swaziland it helped consolidate resources for TB control, foster Government commitment and build strong partnerships and for Zambia it helped increase case detection.

The Abuja Call for Accelerated Action towards Universal Access to HIV and AIDS, Tuberculosis and Malaria Services of 2006, otherwise known as the Abuja Declaration, is an important Continental declaration of the AU to which SADC Member States subscribe. While the Declaration deals with leadership, resource mobilization, human rights, and strengthening of health systems among others, it has been known mainly for its target, pledged by Member States of allocating 15% of Government budgets to health.

The figures below indicate how SADC Member States have performed in the Abuja Declaration target of spending 15% of Government budget on health.

General Government expenditure on Health as a percentage of general Government expenditure

DRC	1.7%	Swaziland	9.3%	Mozambique	14.2%
Mauritius	7.9%	Zimbabwe	9.3%	Zambia	15.7%
Lesotho	8.2%	Seychelles	11.4%	Botswana	16.7%
Angola	8.4%	Malawi	12.1%	Tanzania	18.1%
S. Africa	9.3%	Namibia	12.1%		

Source: World Health Organization, Global Health Observatory Data Repository: Health Expenditure Ratios, 2009 figures

These figures indicate that by 2009 only three SADC MSs (Zambia, Botswana and Tanzania) had attained this Abuja Declaration target of spending 15% of Government budget on Health.

5.2 SADC Regional Response to the TB Epidemic

The cooperation of SADC Member States in TB control and the action of the SADC Secretariat derive from several documents. Firstly, there is the SADC Protocol on Health which came into force in 2004. The aim of the Protocol is to harmonize and rationalise resources in the implementation and attainment of the health objectives of the Region. Two articles of the Protocol are of specific importance to tuberculosis control:

- Article 9: Communicable Disease Control
- Article 12: Tuberculosis Control

Member States have now adopted The SADC Framework for the Control of Tuberculosis which covers the period 2007-2015. The Framework gives the following strategic approaches for the purposes of achieving its objectives:

- Coordination and harmonization of national TB control policies and guidelines in SADC Region in order to ensure enhanced and expanded quality DOTS services accessible to all TB patients
- Health system strengthening to support expansion and extension of quality DOTS services
- Strengthening of partnerships and collaboration between TB programmes, HIV programmes, NGO's, private sector and civil society and other sectors in the SADC Region.

The SADC Secretariat is in the process of implementing the above strategic approaches of the Framework. The purpose of the frameworks is two-fold; firstly, to compliment the national work that is on-going and secondly, to facilitate the integration agenda through harmonization.

Progress on the various strategic approaches is summarized below:

5.2.1 Coordination and Harmonization of National TB Control Policies and Guidelines

- Harmonized Minimum Standards for the Prevention, Treatment and Management of Tuberculosis in the SADC Region

The Minimum Standards for TB were finalised in 2010 and were reviewed and approved by SADC Ministers of Health at their meeting in Lubumbashi in November 2010. The minimum standards address the key areas of TB control, including diagnosis, case definition, treatment, paediatric TB, TB/HIV co-infection, and drug-resistant TB. Minimum standards are also presented for key cross-cutting issues relating to TB control, including laboratory services, cross-border control, and TB infection and prevention control.

There is special emphasis on formalising TB/HIV collaboration, ensuring that HIV counselling and testing is provided to all TB patients, and that TB screening is provided to all HIV-positive clients as part of routine management. All children younger than five years, and those that are HIV-infected (irrespective of age), are to be screened for TB disease. Steps to ensure the diagnosis and successful treatment of MDR-TB are also outlined.

Member states are expected to align their TB programs with the regional Minimum Standards.

- Policy Framework for Population Mobility and Communicable Diseases in the SADC Region

The draft framework calls for harmonised communicable diseases treatment regimens and management guidelines across SADC Member States, coordinated cross-border referral services and continuity of care for patients with communicable diseases, and joint programming for communicable disease control along common borders. They also describe steps to achieve equitable access to health services for cross-border mobile populations, the coordination of regional public health surveillance and epidemic preparedness, health promotion among mobile populations, and legal, regulatory and administrative reforms.

With regard to population mobility and communicable diseases, the SADC secretariat is facilitating two major processes, namely the development of a Regional Framework for Population Mobility and Communicable Diseases and the development of a referral form for TB.

The Draft framework was completed in 2009. However, the SADC Secretariat has been advised by Member States to clearly articulate the financing mechanism for the Framework and the role of the private sector before it can be taken to the Ministers of Health for approval.

The process for developing financing mechanisms for the mobile population has been initiated. The process includes:

- Assessing the magnitude of migrants in the SADC region and mapping out the sources, transits and destinations of the migrants.
- Undertaking cost benefit analysis of migrants for Member States
- Undertaking an analysis of the costs for prevention and control of the three major communicable diseases (HIV and AIDS, TB and Malaria) in the context of migrant population. This will include estimating the demand for health services by migrants.
- Calculating the costs for delayed response to prevention and compare with the costs for emergency services (Primary health care versus emergency services);
- Estimating the costs for trans bounder access to health care; and
- Defining a comprehensive financing mechanism that could be employed at regional, bilateral and national levels to support migrant health. This would include the role of the Private Sector.

The process is expected to be completed by early 2012. The proposals for financing will then be presented to the Ministers of Health meeting for review and possible approval.

The Second initiative is related to the development of a referral form for TB. This has been prioritized considering the high levels of mobility in the region and the time required to successfully complete TB treatment, which is typically, six months for a standard course of treatment and up to 24 months for MDR TB.

The main purposes of the referral/ transfer/notification form include:

- Enhancing the continuum of care;
- Reducing treatment interruption;
- Improving collaboration on TB control efforts amongst MS;
- Reducing the spread of TB in the region

This form will also facilitate the exchange of information between Member States to ensure that patients continue their treatment when moving from one MS to another and not defaulting on their treatment. Before the form can be fully operationalized, it will be implemented in selected Member States.

The republic of South Africa has been requested to pilot test the form. After the pilot, it will be adopted for regional use.

- Regional Minimum Standards for the Harmonized Control of HIV and AIDS, Tuberculosis and Malaria in Militaries in the SADC Region

This framework has also been approved and is ready for implementation. The SADC Secretariat will facilitate and coordinate the implementation, working with Ministries of Health, national coordinating bodies and Military Health Services.

The proposed regional minimum standards are informed by the SADC Protocol on Health and the Maseru Declaration. Key among the principles guiding them are universal access, gender equality and non-discrimination, and the need to involve all partners (civil and military) in the planning, implementation and evaluation of the standards. The regional minimum standards serve as a framework for guiding the regional `harmonisation of activities for preventing and controlling HIV and AIDS, TB and Malaria in all SADC Member State militaries. They set out minimum policy requirements for Governments, military health service managers and other policy development personnel in the areas of policy and programming, training, prevention strategies, diagnostic tools and methods, case management, treatment and care, as well as referral systems, data collection, and monitoring and evaluation.

Since the framework was approved in 2009, the Military Health Services have been encouraged to use the Minimum Standards. In addition, the SADC Secretariat has initiated a process to strengthen domestication of these standards through training.

5.2.2 Health Systems strengthening to support extension and expansion of quality DOTS services

The implementation of DOTS can only be sustainable if it is done in the context of a strong health system. Technology and Infrastructure constitute an important pillar of a National Health System, the others being Leadership and Governance, Health Financing, Health Information Systems, Human Resources for Health and Service Delivery. It is in this regard that laboratory services are treated as critical in the implementation of DOTS within the context of the SADC Framework for the Control of Tuberculosis. Progress in this strategic approach can be summarized as follows:

i) Minimum Standards for National Reference Laboratories in the SADC Region

Diagnostic services are an essential component of the Health System. They are particularly important in Tuberculosis Control. SADC recognizes that National Reference Laboratories are at the pinnacle of diagnostic service provision. It is in this light that SADC adopted the Minimum Standards for National Laboratories in the SADC Region.

The SADC Secretariat will establish a laboratory coordination mechanism to streamline its support for laboratory services, while WHO will provide technical support and advice, and assist in resource mobilization and in meeting training and human resource needs.

ii) Functions and Minimum Standards for Supranational Reference Laboratories (SNRL) in the SADC Region

Since there is a range of essential diagnostic tests that currently cannot be performed in some Member States, it is essential that selected laboratories in the Region be able and empowered to conduct these tests for other Member States. These laboratories are to serve as referral facilities for national reference laboratories.

The SNRL for HIV is expected to perform laboratory tests for which there is limited capacity in individual MSs such as HIV Drug Resistance (HIVDR) genotyping. Three laboratories have been identified to serve this purpose. These are the national HIV reference laboratories from Botswana, South Africa and Zimbabwe.

The SNRL for TB on the other hand is expected to have the capacity to diagnose Multi-drug resistant TB (MDR) and in particular extensively drug resistant TB (XDR) and to genotype TB strains is an essential requirement for a TB-SNRL. The laboratories selected for this services are based in Botswana and Zambia.

With regards to Regional Centres of Excellence (RCE's), their focus will mainly be on Human Resource Capacity Development and Quality Assurance. The former is expected to support HR development and training to complement the efforts of MS NRLs by providing critical human resources through twinning schemes, mentorship and/or regular hands on laboratory training programs. The National Institute of Communicable Diseases in South Africa has been selected to be the Regional Centre of Excellence.

The role of Regional Centres of Excellence in Quality Management would be to introduce and implement integrated quality management systems to include amongst others, participation in External Quality Assessment schemes (EQAs) for all diagnostic and monitoring tests, establishing integrated, cost-effective and sustainable national EQA schemes that strengthen external and internal quality control, process control, documentation, safety and waste management systems in Member States. Institutions in two Member States have been selected to provide these services. These are the National Institute of Communicable Diseases in South Africa and the Zimbabwe National Quality Assurance Program.

These services are expected to become operational once the laboratories fully meet the minimum standards and also after the signing of the memorandum of understanding among Member States.

iii) Harmonized Surveillance Framework for HIV and AIDS, Tuberculosis and Malaria in the SADC Region

The Regional HIV and AIDS, TB and Malaria reports will be prepared annually, and Member States are required to prepare national annual reports based on the SADC core indicators.

In this regard a framework for core indicators has already been developed for TB and is being implemented and is used for the preparation of the annual report.

The Regional HIV and AIDS, TB and Malaria reports will be prepared annually, and Member States are required to prepare national annual reports based on the SADC core indicators. National reporting guides have been developed and are the bases for regional reports.

5.2.3 Strengthening of Partnerships and Collaboration between TB Programmes, HIV Programmes, NGO's, Private Sector, Civil Society etc.

Meetings of TB Programme Managers as well as those of TB Managers and Partners are now established and regular. The SADC Secretariat convenes meetings of the National TB Programme Managers and the Partners annually on a back to back basis. The Managers meet to take stock of progress and deliberate on a theme decided in the previous meeting. The partners are also appraised on progress and they give an update on their own activities.

Both meetings discuss the draft SADC Annual TB Report and give their inputs.

5.3 Tracking Progress of Member States towards meeting the Regional, Continental and Global Commitments.

SADC Member States subscribe to the Stop TB Strategy and to its component DOTS Strategy (Directly Observed Treatment, Short Course). As a result, the internationally agreed to indicators are used by the Member States (including those of SADC) for monitoring progress towards the agreed targets.

This report will concentrate on those indicators relating to the monitoring and evaluation of programme performance, although others relating to impact will also be examined. The indicators are used to measure coverage targets (monitoring), reaching strategic and outcome objectives (evaluation) and impact objectives (epidemiological surveillance). The calculation of most indicators is achieved mainly through the use of the Recording and Reporting system.

Below are the components of both strategies:

Components of Stop TB Strategy:

- Pursuing high-quality DOTS expansion and enhancement
- Addressing TB/HIV, MDR-TB and other challenges
- Contributing to health system strengthening
- Engaging all care providers
- Empowering people with TB, and Communities
- Enabling and promoting research.

Components of DOTS:

- Political commitment with increased and sustained financing
- Case detection through quality assured bacteriology
- Standardized treatment with supervision and patient support
- An effective drug supply and management system
- Monitoring and Evaluation system and impact measurement

Performance of Member States in the components of DOTS and component 2 of the Stop TB Strategy (TB/HIV and MDR-TB) which are regarded as critical is examined below.

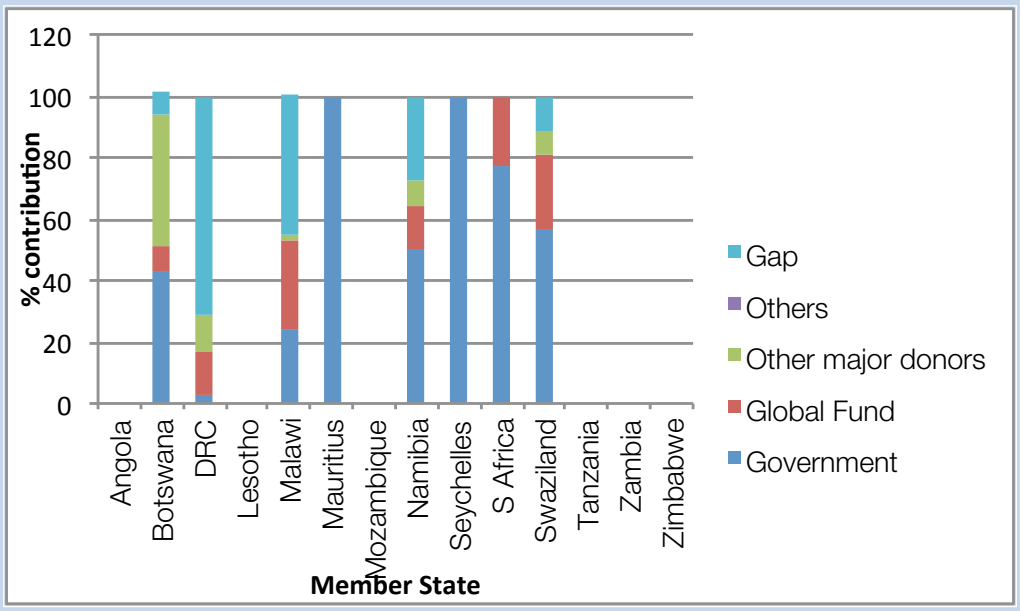
5.3.1 Political commitment with increased and sustained financing

Member States were asked to provide information on how their National Tuberculosis Programmes (NTPs) were financed, including a breakdown of the different sources of finance.

Figure 4 summarizes the sources of funding for NTPs in those Member States that could provide the information. Because some MS do not have specific budget lines for TB, they have not provided the data requested for this report. The graph shows quite a variation in sources of finance for TB programmes, but Governments are the single largest source for most Member States followed by The Global Fund, with the exception of DRC where Government contribution is quite low at 2.6%. . Eight MSs have provided data and five of them have indicated the gap in their funding, ranging from a low of 7% and 12% in the middle income countries of Botswana and Swaziland to 70.5% in the low income country of DRC. As expected, Mauritius and Seychelles programmes are 100% Government funded. South Africa and Swaziland are the only other MS with more than 50% funding by Government. Malawi also indicated later that its Government contribution was 50%, but did not provide the figures to include in the graph. In Botswana and Namibia Government contribution is between 40% and 50%. Botswana, Namibia, South Africa and Swaziland are classified as Middle Income countries and tend to have less funding from bilateral donors

Member States also demonstrate commitment by deploying staff to the NTP. All MS with the exception of Seychelles have NTP Managers and have professional staff in the NTP, including M&E officers, although variable in number and profession. Most MS also have TB coordinators at district level and at Provincial level where applicable.

Fig. 4 Sources of funding for NTP's in SADC (% contribution by each source) 2010



Source: Member States reports to SADC Secretariat

Most Member States have costed strategic plans ranging from five to six years. Mauritius plan is only three years and not costed as it is part of the MOH budget. No information regarding TB strategic plans was received from Seychelles, Tanzania and Zambia.

5.3.2 Case detection and diagnosis through quality-assured bacteriology

Detection of TB cases requires that affected individuals are aware of their symptoms, have access to health facilities and are evaluated by health workers who recognize the symptoms of TB. Health workers must have access to a reliable laboratory and ensure that the necessary specimens are collected for examination.

The most common symptom of pulmonary TB is a persistent, productive cough, often accompanied by non-specific symptoms such as fever, night sweats and loss of weight. A cough of 2-3 weeks duration therefore is an important screening criterion for initiation of TB investigation. There are also symptoms and signs related to extra-pulmonary TB relevant to affected sites such as lymph nodes, pleura, meninges, spinal cord etc. However pulmonary TB is always the dominant type of TB, and also the most important for the spread because TB is spread mainly by the droplet method.

Countries should aim to diagnose and treat successfully as close as possible to 100% of all estimated tuberculosis cases; all forms of the disease and all age groups.

Early laboratory diagnosis of Pulmonary TB relies on the microscopic examination of respiratory specimens, especially sputum, for Acid-Fast Bacilli(AFB). The technique is relatively simple and inexpensive and is currently indispensable in the detection of the most infectious cases of pulmonary TB. Where resources permit, the use of fluorescence microscopy, or even better, fluorescence microscopes equipped with a light-emitting diode (LED) is faster and more sensitive. The latter avoids the need for dark rooms.

Mycobacterial culture is much more sensitive than smear microscopy and provides a definitive diagnosis of TB. It is therefore seen as the gold standard for bacteriological confirmation. However it is impractical to do culture on all cases in poor-resource settings, so cases for culture have to be selected on set criteria. Ideally culture should be done on liquid medium, but this is more complex than the solid medium that is still largely used in poorer countries. Culture on liquid medium is rapid and can provide results in about 10 days as opposed to solid medium that needs 4-8 weeks.

Globally it is recommended that coverage with sputum-smear microscopy be one centre per 100,000 population, and coverage with culture and DST be equal or more than one centre per 5 million population.

Table 5 shows the laboratory diagnostic capacity of SADC Member States in TB.

It is evident from the table that with the exception Angola, Lesotho, Mauritius and South Africa the SADC Member States have achieved the microscopy coverage of 1 centre to 100,000 population. With culture and DST (1st line), only the Member States with smaller populations, and South Africa, have achieved the desired ratio of 1 centre to 5 million population. The countries with bigger populations (Angola, DRC, Mozambique, Tanzania, and Zimbabwe) have not achieved the ratio. The table also shows that only DRC and South Africa have the capacity to do drug sensitivity testing for second line drugs. South Africa provides this service to most SADC Member States.

Countries are now encouraged to adopt new diagnostic technologies for Tuberculosis. SADC Member States were asked to indicate what new technologies they have adopted. Firstly, LED Microscopy: Lesotho, Mauritius, Namibia, Seychelles, Swaziland and Zambia indicated they had adopted this technology. Botswana, DRC, Malawi and Mozambique and Zimbabwe were either in the process of adopting the technology, having some facilities using it or having it used by partners. With regard to Culture and DST, only Swaziland had adopted Line Probe Assay (LPA) and five MSs were either in the process of rolling it out or had some facilities using it (Botswana, Malawi, Mozambique, South Africa and Zimbabwe). Three hospitals in Zimbabwe were using X pert in 2010, while Swaziland had also planned to start using X pert in September 2010. In Botswana only one partner is using X pert.

Member States are rather slow in adopting these new technologies and should be urged by the SADC Secretariat to take appropriate steps to take them up.

Table 5 TB Laboratory services in SADC: Coverage of laboratory services 2010

			TB LABORATORY SER VICES 2010			
			Number of labs working in NTP			
COUNTRY	POPULATION	Microscopy centres	Pop per centre	Culture centres	DST 1st line	DST 2nd line
Angola	18,081,000	147	1:180,000	2	2	0
Botswana	1,822,858	56	1:32,551	1	1	0
DRC	71,102,661	1460	1:48,700	1	1	1
Lesotho	1,876,663	17	1:110,391	1	1	0
Malawi	14,533,011	216	1:67,375	4	1	0
Mauritius	1,250,000	1	1:1,250,000	1	1	0
Mozambique	21,876,855	433	1:50,524	2	2	0
Namibia	2,143,411	31	1:69,142	1	1	0
Seychelles	86,525	2	1:43,262	1	0	0
S. Africa	49,991,300	256	1:195,278	15	15	15
Swaziland	1,055,506	14	1:75,393	2	1	0
Tanzania	43,187,823	900	1:47,986	4	1	0
Zambia	13,046,508	220	1:59,302	3	3	0
Zimbabwe	12,595,418	200	1:6,300	2	2	0

Source: Member States' reports

An important weakness in diagnosis is that several Member States still report a significant proportion of their pulmonary TB cases not subjected to smear microscopy. This is despite the favourable ratio mentioned above. The problem may be due to easy accessibility of X-Ray diagnosis, although poor accessibility of microscopy services may be a factor in some cases. For this report, no figures were availed of the percentage of pulmonary cases actually diagnosed by sputum microscopy.

5.3.3 Provide standardized treatment with supervision, and patient support

The global target of treatment success rate in DOTS programmes is 85%. In the SADC Region, which is the epicentre of the TB/HIV dual epidemic, it is acknowledged that the high prevalence of HIV and MDR tuberculosis constitute specific challenges impeding high success rates.

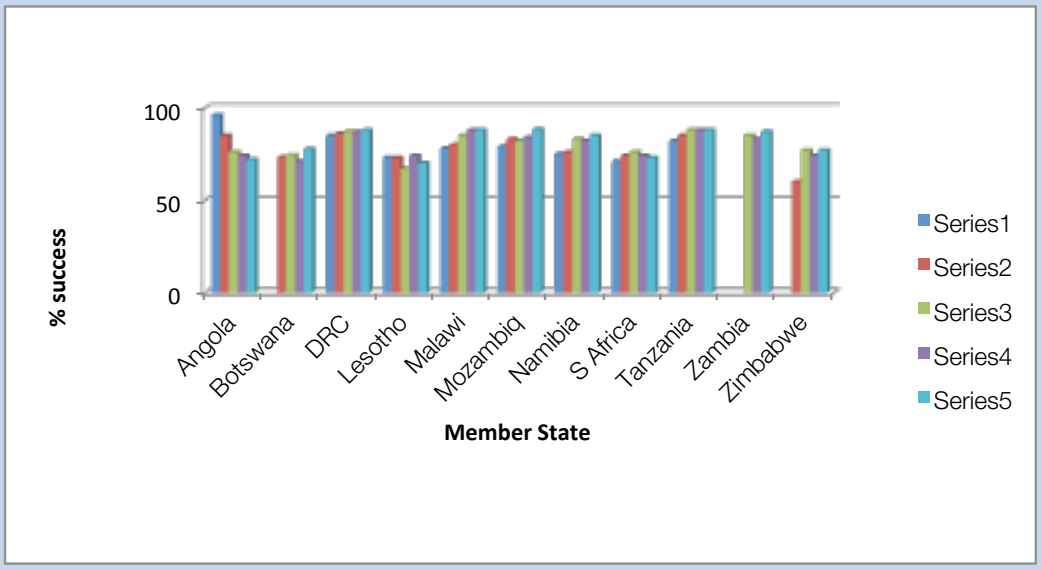
Health system weaknesses, poor health-care access, and several patient-related factors, including financial barriers, create challenges for treatment adherence in most Member States as well.

Cohort analysis of smear positive cases is given priority because of the importance of smear positive cases in the epidemiology of tuberculosis. The smear positive cases are the main transmitters of tuberculosis infection, and therefore their cure is especially important in breaking the chain of transmission. Cohort analysis gives the outcome of treatment at 12 months in terms of Success Rate (cured, completed treatment), Defaulted, Died, Transferred Out, and Treatment Failed.

Figure 5 gives the success rates in SADC Member States for cohorts registered in 2005 to 2009. The data suggests that most Member States have tended to have similar success rates for the period, although some of them have for the first time achieved the 85% success rates in 2009. In the 2009 cohort seven Member States achieved the prescribed 85% success rate: DRC, Malawi, Mauritius, Mozambique, Namibia, Tanzania and Zambia. Two MSs have achieved this success rate for the first time, viz., Mozambique and Namibia. This means that half of SADC MSs are still falling below target in their treatment success rates, although there is a slight improvement from the previous reporting year.

Unsuccessful outcomes are another way of illustrating the low success rates. Figure 6 shows the percentage of defaulters and deaths in the cases registered in 2009. In the 2009 cohort, eight MS registered particularly high case fatality rates of 8% or more (see Table 1). With the exception of Botswana and Namibia, these were the same MSs that registered case fatality rates of 8% or more in 2008. For default rates in cases registered in 2009, six MSs (Angola, Botswana, Namibia, South Africa, Swaziland and Zimbabwe) registered defaulter rates of 5% and above (Botswana and Namibia had registered less than 5% in the 2008 cohort, therefore indicating a little deterioration). Eight MS have maintained defaulter rates of less than 5% (DRC, Lesotho, Malawi, Mauritius, Mozambique, Seychelles, Tanzania and Zambia). Defaulting is a very important source of drug resistant- tuberculosis, and it is essential that Member States take particular steps to bring down default rates. It is also recognized that Drug Resistant mycobacteria are also being transmitted by patients.

Fig 5 Treatment Success Rates 2005-2009 SADC



Series 1: 2005 Series 2: 2006 Series 3: 2007 Series 4: 2008 Series 5 2009
Source: Constructed from data provided in MS reports

Fig. 6 Default and Death Rates 2009 cohort

Source: Constructed from data provided in MS reports

5.3.4 An effective drug supply and management system

All Member States have a system of drug supply in place for tuberculosis. Some Member States report that they have experienced stock outs for short periods, usually for specialized drugs such as FDCs in Botswana, paediatric formulations in Malawi and South Africa and kanamycin in Namibia. South Africa also reported stock outs of Streptomycin that were long enough to affect patient management. Others that reported periods of stock outs were DRC, Lesotho, Mozambique and Zimbabwe. Procurement problems were reported as the cause in Botswana and Namibia, due to poor capacity of suppliers. Only Lesotho reported temporary problems in their Supply Chain Management.

Some MSs are supported by Global Health Initiatives like Global Fund, PEPFAR, Stop TB Partnership (GDF) or UNITAID and by multilaterals such as WHO as well as by bilateral Agencies. However no specific information was given as no problems were indicated.

5.3.5 Monitoring and Evaluation system and impact measurement

The DOTS strategy has a well-articulated Monitoring and Evaluation framework. This includes assessing activities, monitoring costs and expenditure, determining the extent of programme coverage and evaluating treatment outcomes, as well as the epidemiological impact of the programme.

At the centre of the reporting system is the cohort analysis, which is the systematic analysis of standard outcomes of treatment.

SADC Member States are all carrying out the Recording and Reporting system which is the basis for the DOTS and Stop TB strategies and are regularly reporting to WHO and now to SADC. Data in this report are largely from this system in Member States.

Judging from the consultative meeting of National TB Programme Managers, virtually all the programmes now have M&E focal points. This has generally improved the quality and timeliness of reports.

5.3.6 Addressing TB/HIV, MDR-TB, and other challenges

Since the adoption of the DOTS Strategy in the early 1990s, new challenges have emerged that made it difficult for DOTS to attain its targets. These challenges were mainly related to the impact of the HIV pandemic, which was particularly strong in the SADC Region, and to the emergence of MDR-TB, which has also been influenced by HIV. This is what led to the adoption of the Stop TB Strategy, which can be regarded as an expansion of the DOTS Strategy.

In 2004, a WHO interim policy on collaborative tuberculosis and HIV activities was formulated, and laid out the interventions needed to decrease the joint burden of tuberculosis and HIV. This interim policy proved to be good guidance during the period when data was insufficient to make it more complete, but is now in need of revision. However, it is used in this report as a framework to assess the progress Member States have made in articulating the TB/HIV collaborative activities.

An analysis is undertaken here using the three major categories of interventions set out in the WHO interim policy on collaborative tuberculosis and HIV activities (Table 6). The first table deals with establishment of mechanisms for collaboration (Table 6A). The second table (Table 6B) deals with decreasing the burden of TB in people living with HIV, while the third table (6C) deals with decreasing the burden of HIV in TB patients. Since no format for answers was given to MSs, and the answers are qualitative and not quantitative, it has proven difficult to avoid using the MSs own words in the tables.

Table 6 Implementation of TB/HIV Collaborative Activities

Table 6A Establishment of Mechanisms for Collaboration

COUNTRY	Ensure coordinating body exists	Conduct surveillance of HIV prevalence in TB patients	Carry out joint HIV/ TB planning	Conduct monitoring and evaluation (M&E)
Angola	No	Yes	Yes	Yes
Botswana	Still being set up. NTP coordinators central level	All TB patients offered HIV testing	TB/HIV policy in place. TB/HIV strategic plan in draft.	Integration of the M&E systems of the 2 programmes not yet in achieved
DRC	Exists. Central and Provincial levels	On course. 24% tested in 2010	On course. 239 of 515 zones	Performed by the programme
Lesotho	Exists. Meets monthly.	HTC offered all TB patients	Yes	Yes
Malawi	National level only	Fully achieved	National level	National & zonal levels
Mauritius	Nat. AIDS Secretariat coordinate TB/HIV activities	95% TB patients screened	Regular meetings are convened	By MOH in collaboration with NAS
Mozambique	Functional	Routine surv. in place	Done (all levels)	-
Namibia	Hi achievement	High achievement	Variable performance	High achievement
Seychelles	90%	100%	100%	75%
S. Africa	National, Provincial	-	-	National, Provincial
Swaziland	Exists	All TB patients tested	The two programmes meet quarterly	National research and M&E focal point
Tanzania	Operative	Operative in all districts	Regular quarterly meetings	Operative thru National M&E system
Zambia	Exists	Exists	Being done	Being done
Zimbabwe	Coordinating bodies (all levels)	Has started	Ongoing	Data collection tools integrated into NTP

Source: Constructed from data provided in MS reports

Establishment of mechanisms for collaboration: All Member States are at different stages of implementing the different mechanisms with a few having achieved full implementation. Some have actually indicated percentage implementation of the different mechanisms.

Table 6B Decrease Burden of TB in People Living with HIV

COUNTRY	Establish intensified case finding	Introduce Isoniazid Prevention Therapy (IPT)	Ensure TB infection control in health care and congregate settings
Angola	Yes	No	Yes
Botswana	Implemented passively	Implemented since 2004. Has moved from NTP to NAP	Implementation inadequate at facility level. Guidelines disseminated.
DRC	Checklist in place to assure implementation	Difficult to implement- evidence questioned?	Guidelines exist
Lesotho	Implementation to start 2011	Implementation to start 2011	-
Malawi	Fully established at District and TB registration sites	Not implemented	Implemented In 21 of 28 districts
Mauritius	All cases suspected of TB	In the pipeline	Ongoing
Mozambique	Functional	Implementation of WHO new recommendations being adopted	On course
Namibia	High	High	Moderate
Seychelles	100%	-	100%
S. Africa	Facility, Community	Facility	Facility
Swaziland	Done in all facilities	Being rolled out. Most facilities already covered	All TB Treatment-initiating facilities have focal points
Tanzania	18 pilot districts operating	National IPT Guidelines finalized	National Guidelines finalized
Zambia	On-going	On-going	On-going
Zimbabwe	Carried out in all health facilities	-	Practiced in all levels of health care

Source: Constructed from data provided in MS reports

Decrease the burden of TB in people living with HIV: All MS have established intensified case finding. Botswana describe theirs as passive, which implies it is only offered to those asking for it. Regarding Isoniazid Preventive Therapy (IPT), while most MS are still at a preparatory stage, only Botswana, Namibia, Swaziland, Tanzania and Zambia have fully implemented the mechanism. Infection control in Health Care and Congregate settings is being implemented by all Member States.

Table 6c Decrease the burden of HIV in TB patients

COUNTRY	Provide HIV testing and counselling	Introduce HIV prevention methods	Introduce co-trimoxasole prevention therapy (CPT)	Ensure HIV care and support	Introduce Anti-retroviral therapy (ART)
Angola	Yes	Yes	Yes	Yes	Yes
Botswana	80% coverage (2010) aiming for 100%	Yes. Health education and condoms offered	76% coverage to those with TB/HIV	Referral of TB/ HIV co-infected being improved to HIV clinic	Strengthening of referral of HIV +ve TB patients for ART initiation being strengthened. 45% started.
DRC	239 of 515 zones in the country	52000 condoms provided to co-infected patients	Fully implemented	75% covered with psychological support	10% covered
Lesotho	All TB patients are offered HTC	Condoms provided in TB Clinics	Provided to all HIV +ve TB patients	Provided to all HIV +ve TB patients	Yes as policy
Malawi	In all public & private facilities	In all public and most private facilities	In all TB registration and all 350 ART centres	Established in all 28 districts	In all TB registration centres and in all 350 ART centres
Mauritius	100% coverage	HIV prevention methods explained to all TB patients	CPT provided to all HIV +ve TB patients	Yes	Provided by AIDS Unit
Mozambique	Functional (2007)	Functional	Functional	Functional	WHO new recommendations accepted
Namibia	High	Moderate	High	High	Moderate
Seychelles	Yes	50%	To those with CD4 count <200	50%	To those with CD4 count <350
S. Africa	Facility, Community	Facility, Community	Facility	Facility, Community	Facility
Swaziland	Provided in all TB facilities & clinics	Discussed in all TB facilities & clinics	Provided to all HIV +ve TB patients	Given to all patients on pre- ART	Provided to all reactive TB patients-integrated
Tanzania	90% coverage	60% coverage	90% coverage	Implemented in piloted districts	HIV clinics and selected TB clinics
Zambia	Being done	Being done	Being done	Being done	Being done
Zimbabwe	Offered to TB patients at all health care levels	Discussed with TB patients at all health care levels	Provided to all HIV+ve TB patients	Provided by HIV community based groups	Provided to all HIV +ve TB patients-WHO guidelines

Source: Constructed from data provided in MS reports

Decrease the burden of HIV in TB patients: All MS are providing HIV testing and counselling to TB patients but coverage still varies (see Table 3). HIV prevention methods are also being provided at various levels and approaches by all MS. CPT is also offered in all MS at different levels of coverage, so is ensuring HIV care and support. ART is also very variable in coverage but is offered by all Member States.

MDR-TB: The response to MDR-TB has been variable in Member States. Table 2 has given the extent of the problem in the countries and their response, and illustrates that due to capacity constraints, both diagnosis and treatment are still a problem. Drug resistance surveys are not consistently done by the various countries, making comparisons unreliable. All the SADC Member States, with the exception of South Africa and DRC, do not have the capacity to do DST for 2nd line drugs, with the result that virtually the whole of SADC depends on that one Member State for this important test (Tanzania and DRC depend on Belgium).

Member States have however generally developed plans and have submitted them to the Green Light Committee (GLC). At least 8 Member States have indicated their plans as approved or in the process of being approved by the GLC, some assisted to procure 2nd line drugs. The Global Fund, UNITAID, GLC, and some other Donors are also assisting some Member States with these drugs.

It needs to be reiterated that it is only by proper implementation of the DOTS programmes, with treatment success rates of over 85% and reduction of default rates to a minimum, that the problem of MDR/XDR-TB can be fundamentally dealt with.

5.4 Emerging Good Practices

Good practices should make an impact on the implementation of DOTS and the Stop TB strategy generally, thus improving success rates in treatment outcomes, because this is the area where most NTPs are showing weakness. The following emerging good practices have been selected from those submitted by Member States in their reports to SADC and they were judged important by the author. They reflect those practices that the MS regard as having made an impact in various components of DOTS, particularly in enhancing case-finding and in improving treatment outcomes. Member States putting them forward are stated in brackets

- Community TB care: DOTS started as a facility based system, patients coming daily to the health facility for Daily Observed Treatment. It has been found that using various treatment supervisors in the community is more convenient to patients and enhances compliance (Mozambique).

- Scale up of TB/HIV collaborative activities: While most MS are implementing the various mechanisms elaborated in the WHO 2004 interim policy on TB/HIV collaborative activities, some are still very early in implementing some of the components. Those that are advanced in their implementation are reaping the benefits (Namibia).

- Decentralization of sputum smear collection/ establishment of community-based sputum collection points: The benefits of setting up collection points for sputum in the community have been stated by those MS implementing this system. It raises case finding of sputum positive patients (Malawi, Zimbabwe).

- Intensified case finding using one standard screening tool, extending to all levels of health facilities: This method also enhances case finding; in one MS (Swaziland) there are cough officers deployed in high volume facilities and this enhances case finding.

Integration of TB and HIV Recording and Reporting (R&R) tools: strengthens information system for both diseases in an integrated fashion (Malawi).

6. Gaps and Challenges in TB Control

6.1 Policy and Programme Gaps

Policies are generally well developed in Member States as they are based on internationally agreed strategies such as the Stop TB Strategy and DOTS. The gaps in programmes relate largely to implementation such as delivery of directly observed treatment (health facility vs. community based), ensuring bacteriological diagnosis of all pulmonary cases, drug and laboratory supplies to avoid stock-outs, and keeping up to date information systems on TB through maintenance of the standard DOTS Recording and Reporting system. Few MSs have planned prevalence surveys despite the inadequacies of the Case Detection Rates that are generated by WHO from models.

The impact of mining on TB in MSs is not being systematically assessed despite the historical association of mining, especially labour migration, with the disease and anecdotal evidence that mining continues to affect TB epidemiology in some of the MSs.

6.2 Challenges

Member States have submitted various challenges they face in implementing various aspects of their NTPs, mainly related to the various components of DOTS and the Stop TB Strategy, but also to health systems related issues, such as funding and human resources. What countries are doing to address these issues is dealt with in various areas in the body of the report.

- Drug resistant TB (MDR/XDR-TB)
- Low access to ART for TB/HIV co-infected patients
- High rate of TB/HIV co-infection
- Continuity of care in the management of cross-border patients with DR-TB
- Declining international resources for TB control/ slow release of funds by donors
- Low motivation of health care workers in the general health services
- Persisting poor treatment outcomes (low Success Rates)
- Implementation of Private-Public mix

7. Recommendations

SADC Secretariat:

Recommendations from previous reports have largely been implemented. It is recommended that the Secretariat

- Continue with its advocacy with WHO for prevalence surveys in Member States not included in the initiative
- Assist MS in mobilizing funds for TB programmes from Global Health Initiatives
- Implement the monitoring mechanisms for the various SADC Frameworks related to TB, including the core indicators that were in preparation

Member States

Considering that there are still weaknesses in the implementation of the various aspects of the Stop TB Strategy and DOTS, Member States should focus on those components in which indicators show weaknesses. It is recommended that Member States

- Make a special effort to identify those components of DOTS and the Stop TB Strategy where indicators show they are particularly weak
- Concentrate in making improvements in those components
- Request partners and the SADC Secretariat, to sponsor their staff to go to benchmark in those Member States that are performing particularly well in the relevant components
- Where necessary, advocate with Ministries of Health to allocate more staff or financial resources to the NTP order to improve the particular components

It is further recommended that

- MSs which have not done Drug Resistance Surveys or whose surveys are out of date conduct such surveys to keep their MDR/XDR-TB status up to date
- MSs consider adopting new diagnostic technologies that facilitate rapid diagnosis; it is recognized that this has started in a small way but it needs to be scaled up quickly
- All the MSs with high TB burden consider conducting prevalence surveys
- Ms with operating mines start assessing the impact of mining on their TB problem and start control activities accordingly, following the recommendations of the 2010 Sandton meeting that was convened by the Stop TB Partnership involving South Africa and neighbouring countries that send migratory labour into the country's mines.

8. Annexes

Annex 1: Glossary of common terms and definitions

Term	Meaning/Definition
Definition of TB Cases	
Case of tuberculosis	A patient in whom tuberculosis has been confirmed by bacteriology or diagnosed by a clinician.
Definite case	A patient with positive culture for the Mycobacterium tuberculosis complex. In Member States where culture is not routinely available, a patient with two sputum smears positive for acid-fast bacilli (AFB+) is also considered a definite case.
Pulmonary case	A patient with tuberculosis disease involving the lung parenchyma.
Smear-positive pulmonary case	A patient with one or more initial sputum smear examinations (direct smear microscopy) AFB positive.
Smear-negative pulmonary case	A patient with pulmonary tuberculosis not meeting the above criteria for smear-positive disease. Diagnostic criteria should include: at least two sputum smear examinations negative for AFB; and radiographic abnormalities consistent with active pulmonary tuberculosis; and no response to a course of broad-spectrum antibiotics (except in a patient for whom there is laboratory confirmation or strong clinical evidence of HIV infection); and a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy; or positive culture but negative AFB sputum examinations.
Extrapulmonary case	A patient with tuberculosis of organs other than the lungs (e.g. pleura, lymph nodes, abdomen, genitourinary tract, skin, joints and bones, meninges). Diagnosis should be based on one culture positive specimen, or histological or strong clinical evidence consistent with active extra-pulmonary disease, followed by a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy. A patient in whom both pulmonary and extra-pulmonary tuberculosis has been diagnosed should be classified as a pulmonary case.
New case	A patient who has never had treatment for tuberculosis or who has taken antituberculosis drugs for less than one month.


Re-treatment case	A patient previously treated for TB, who is started on a re-treatment regimen after previous treatment has failed (treatment after failure), who returns to treatment having previously defaulted (see below; treatment after default), or who was previously declared cured or treatment completed and is diagnosed with bacteriologically positive (sputum smear or culture) TB (relapse).
Definitions of treatment outcomes **The definitions are expressed as a percentage of the number of patients registered in the cohort**	
Cured	A patient who was initially smear-positive and who was smear negative in the last month of treatment and on at least one previous occasion.
Completed treatment	A patient who completed treatment but did not meet the criteria for cure or failure. This definition applies to pulmonary smear-positive and smear-negative patients and to patients with extrapulmonary disease.
Died	A patient who died from any cause during treatment.
Failed	A patient who was initially smear-positive and who remained smear-positive at month 5 or later during treatment.
Defaulted	A patient whose treatment was interrupted for 2 consecutive months or more.
Transferred out	A patient who transferred to another reporting unit and for whom the treatment outcome is not known.
Successfully treated	A patient who was cured or who completed treatment.
Cohort	A group of patients in whom TB has been diagnosed, and who were registered for treatment during a specified time period (e.g. the cohort of new smear-positive cases registered in the calendar year 2005). This group forms the denominator for calculating treatment outcomes. The sum of the above treatment outcomes, plus any cases for whom no outcome is recorded (e.g. “still on treatment” in the European Region) should equal the number of cases registered. Some Member States monitor outcomes among cohorts defined by smear and/or culture, and define cure and failure according to the best laboratory evidence available for each patient.

Definitions of outcome and impact measures of TB control	
Outcome	
Case notification rate: all cases	The number of TB cases reported to the NTP per year per 100,000 population. Numerator: Number of all TB cases reported in the past year Denominator: Total population in the specified area Multiplied by 100,000
Case detection rate	1) Numerator: Number of new TB cases detected Denominator: Estimated number of new TB cases countrywide[19] 2) Numerator: Number of new smear-positive TB cases detected Denominator: Estimated number of new smear-positive TB cases countrywide 3) Numerator: Number of new smear-positive TB cases detected under DOTS Denominator: Estimated number of new smear-positive TB cases countrywide
Treatment success rate	Numerator: Number of new smear-positive pulmonary TB cases registered in a specified period that were cured plus the number that completed treatment Denominator: Total number of new smear-positive pulmonary TB cases registered in the same period
Impact	
Incidence	Number of new TB cases occurring during a given period in time
Prevalence	Number of existing cases of TB at a given point in time
Death rate	Numerator: Number of new smear-positive pulmonary TB cases registered in a specified period that died during treatment, irrespective of cause Denominator: Total number of new smear-positive pulmonary TB cases registered in the same period

19 The denominator is a WHO estimation of new cases—pulmonary and extra-pulmonary—based on a mathematical model that takes into account all available data, including case notifications, an estimate of the completeness of notifications, the trend in notifications, TB mortality in the population, studies on TB disease prevalence and risk of infection, HIV prevalence, duration of TB illness, likelihood of receiving TB treatment in different sectors, and case fatality given different treatment scenarios for the individual countries. It can only be used at national level.

Annex 2: Global Declarations, Commitments and Targets for TB Control

Millennium Development Goals (MDGs):

Halt and begin to reverse TB incidence by 2015
Abuja declaration against AIDS, TB, Malaria and other communicable diseases
The primary goal of the Declaration was to arrest and reverse the accelerating rate of HIV infection, TB and Other Related Infectious Diseases (ORID)

Objectives

a) To advocate for optimal translation of earlier commitments of African Leaders into social and resource mobilization for sustainable programming of Primary Health Care.
b) To develop policies and strategies aimed at preventing HIV, Tuberculosis and other related infections, and at controlling the impact of the epidemic on socio-economic development in Africa.
c) To establish sustainable mechanisms for national and external resource mobilization for prevention, and treatment of the persons living with HIV AND AIDS and Tuberculosis.
d) To ensure that we (AU) attend to the needs of vulnerable groups such as children, the youth, women and persons with disabilities, workers and mobile populations.

World Health Assembly resolution 1991

To detect at least 70% of new smear-positive cases in DOTS programmes
To successfully treat at least 85% of detected cases.

Stop TB Partnership

By 2005: At least 70% of people with sputum smear-positive TB will be diagnosed (i.e. under the DOTS strategy), and at least 85% cured.
By 2015: The global burden of TB (per capita prevalence and death rates) will be reduced by 50% relative to 1990 levels.
By 2050: The global incidence of active TB will be less than 1 case per million population per year.

TB Global Plan

- By 2005, and to be sustained or exceeded by 2015: At least 70% of people with infectious TB will be diagnosed (i.e. under the DOTS strategy) and at least 85% of those diagnosed will be cured.
- By 2015:the global burden of TB disease (disease prevalence and deaths) will be reduced by 50% relative to 1990 levels.

Specifically this means reducing prevalence to 155 or fewer per 100 000 population, and reducing deaths to 14 or fewer per 100 000 per year by 2015, including people co-infected with TB and HIV. The number of people dying from TB in 2015 should be less than 1 million.

- By 2050: TB will be eliminated as a global public health problem. Using the criterion for TB elimination adopted in the USA, this means that the global incidence of TB disease will be less than 1 per million population.

Maputo Resolution of 55th Regional Committee of the African Region of WHO of 2005

- Ministers of Health from 46 Member States of the Africa Region unanimously declared TB an emergency in the Region
- Rapidly improve case detection and treatment outcomes through Acceleration of the DOTS coverage
- Reduce patients transfer and defaulter rates
- Accelerate scale up of TB/HIV interventions
- Improve human resources for TB control
- Expand national partnerships and
- Mobilize additional resources for TB control.

SADC Strategic Framework for the Control of Tuberculosis in the SADC Region, 2007-2015

Objectives

- To increase access to high-quality Tuberculosis diagnosis & patient-centred treatment in the SADC Region
- To reduce the suffering and socioeconomic burden due to Tuberculosis in the SADC Region
- To ensure access to prevention, diagnosis and treatment of TB, TB/HIV and MDR/XDR-TB in the SADC Region
- To support the development and adoption of new tools for Tuberculosis prevention, diagnosis and treatment in the SADC Region

Abuja Call for Accelerated Action towards Universal Access to HIV AND AIDS, Tuberculosis and Malaria services, May 2006:

African Heads of State and Government adopted the call at a special summit in Abuja that affirmed previous global and regional targets for TB control as well as called for universal access to TB prevention, treatment, care and support services, including of key TB/HIV interventions.

Annex 3: Global Partnerships and Initiatives in support of TB control[20]

Organizations	Services offered
International Union Against Tuberculosis and Lung Disease (IUATLD/The Union)	Technical support
Global Fund to Fight AIDS, TB and Malaria (GFATM/ Global Fund)	Technical and financial support for national TB programmes
TB Coalition for Technical Assistance (TBCTA) – [ATS, CDC, FHI, KNCV, IUATLD, JATA, MSH, WHO]	Technical support
TB Control Assistance Programme (TB CAP)	Technical support

20 *Also universities, research community etc, and many more; list not exhaustive.*

UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR)	Development of new TB diagnostics
World Health Organisation (WHO)	Technical and financial support
National Institute of Communicable Diseases (NICD)	Laboratory based TB services
University Research Co.(URC)/Centre for Human Services	Strengthening human resources for TB and TB/ HIV
Global TB Alliance	Develop and equitable access to new TBdrugs
Stop TB Partnership and its various initiatives and working groups:	
The Global Drug Facility (GDF)	Provision of TB drugs
Green Light Committee (GLC)	Support in management of MDR-TB
DOTS Expansion Working Group	Support related to laboratory capacity strengthening, public-private mix, childhood TB, and poverty and TB
Working Group on DOTS-Plus	Support in Multidrug-resistant TB management
TB/HIV Working Group	TB/HIV collaboration
Working Group on New TB Diagnostics	New TB Diagnostics
Working Group on New TB Drugs	New TB Drugs
Working Group on New TB Vaccines	New TB Vaccines
Advocacy, Communications and Social Mobilization Working Group	Advocacy, Communications and Social Mobilization Working Group

Annex 4 : Reporting Format used in 2010 (Country Profile)

Country Profile

Country:

Population 2010:

1. TB burden:

1.1 Notifications 2010

TB Notifications (New & Retreatment) No.	TB Notification rate/100,000 (New & Retreatment)	New TB Notifications 2010	TB Notification Rate new cases/100,000

No. of new Pulmonary cases	New Pulmonary cases notification rate/100,000	Pulmonary cases as % of all new cases	Extra-pulmonary cases as % of all new cases

No. of new Smear Positive (SS+) cases	Rate new SS+ cases /100,000	SS+ cases as % of new Pulmonary cases

1.2 HIV Burden in TB Patients

No. New TB Notifications	No. Tested for HIV	% tested	No. +ve	% +ve

1.3 Drug Resistance Burden (MDR/XDR)

No. MDR cases detected 2010	Cumulative MDR cases	No. on treatment	No. XDR cases detected 2010	Cumulative XDR cases	Years Drug Resistance Surveys conducted	Source of drugs (Gvt/GF/ Donors)

2. TB Laboratory Services

Population	Microscopy Centres (No.)	Ratio of population per centre	Labs performing TB Culture (No.)	Labs performing DST 1st line (No.)	Labs performing DST 2nd line (No)

3. Implementation of TB/HIV Collaborative Activities

Activity	Describe level of activity
1 ESTABLISH MECHANISMS FOR COLLABORATION	
1.1 Ensure a coordinating body exists for effective TB/HIV collaboration at all levels	
1.2 Conduct surveillance of HIV prevalence among TB patients	
1.3 Carry out joint HIV/TB planning	
1.4 Conduct monitoring and evaluation (M&E)	
2 DECREASE THE BURDEN OF TB IN PEOPLE LIVING WITH HIV	
2.1 Establish intensified TB case finding	
2.2 Introduce Isoniazid Prevention Therapy (IPT)	
2.3 Ensure TB infection control in health care and congregate settings	
3 DECREASE THE BURDEN OF HIV IN TB PATIENTS	
3.1 Provide HIV testing and counselling	
3.2 Introduce HIV prevention methods	
3.3 Introduce co-trimoxazole preventive therapy (CPT)	
3.4 Ensure HIV care and support	
3.5 Introduce Anti-retroviral therapy (ART)	

4. Human Resources for NTP

National Manager NTP YES/NO	No. professional staff in central NTP office (state key areas e.g. M&E)	% Provinces or Regions with TB Coordinators	% Districts with TB Coordinators

5. Programme Performance

Key Indicator		2010	2009	2008	2007	2006	1990
Surveillance and DOTS Implementation							
Notification Rate (New and relapse/100 000 pop/yr)							
Notification Rate (New cases/100,000)							
Notification Rate (New ss+/100 000 pop/yr)							
Cure Rate SS+ cases (2009 cohort) %							
Treatment success New SS+ cases (cure + treatment completed) %- 2009 cohort							
Treatment success Retreatment SS+ cases (2009 cohort)							
Treatment success All SS+ cases (2009 cohort)							
Treatment success (completed treatment) all cases registered 2009							
Died	%						
Defaulted	%						
Transferred out	%						
Treatment failures	%						
Budget and Finance							
NTP budget by source of funding	Gap (US $, %)						
	GFATM (US $, %)						
	Grants (US $, %)						
	Loans (US $, %)						
	Gov (US $, %)						

6. Other Indicators

A. Gender

i) Give the male/female ratios of

- All TB Cases notified in the year under review
- SS+ cases

B. New Diagnostic Technologies

ii) Have you introduced any of the new diagnostic technologies?

- Microscopy
  - LED Fluourescent microscopy

- Culture and DST
  - Molecular Testing (e.g. Line Proble Assay LPA)
  - X pert

C. TB Strategic Plan: Is there one in existence? What period? Costed?

D. Drug Management

- Any stock outs?
- Any procurement problems?
- Any supply chain problems?

E. Has TB been declared an Emergency?

- When
- What effects has it had on the programme and outcomes?

Annex 5 data tables: TB Report SADC 2010

1. Burden of TB in SADC Member States

1.1 TB Notifications in SADC Member States 2010

Country	Population 2010	TB Notifications (New & Retreatment) No.	Notification rate/100,000 (New & Retreatment)	New TB Notifications 2010	Notification rate/100,000 New cases 2010
Angola	18,081,000	46,166	255	42,310	234
Botswana	1,822,858	7632	419	6560	360
DRC	71,102,661	116,845	164	110,032	155
Lesotho	1,876,633	13140	700	11155	594
Malawi	14,553,011	22,536	155	20,342	140
Mauritius	1,250,000	123	9.8	116	9.28
Mozambiq	21,876,855	46,174	211	42,109	192
Namibia	2,143,411	12,625	569	10,103	471
Seychelles	86,525	91	21.9	19	21.9
S. Africa	49,991,300	396,554	793.3	335,974	672.1
Swaziland	1,055,506	11,146	1056	9706	920
Tanzania	43,187,823	63,453	147	59,668	138
Zambia	13,046,508	48,616	378	42,306	324
Zimbabwe	12,595,418	47,685	378	39,984	317

Source: TB reports from SADC MSs to SADC Secretariat

1.2 New TB Notifications by Type 2010

Country	TB Notification rate new cases 2010 (/100,000)	Pulmonary cases (rate /100,000)	Pulmonary cases as % of all new cases	Rate new Smear-positive cases(SS+) /100,000	SS+ cases as % of new Pulm. cases	Extra-pulmonary cases as % of all new cases
Angola	234	213	83.2%	117	55%	6.8%
Botswana	360	293	81.6%	181	62%	18.4%
DRC	155	123	80%	104	84%	20%
Lesotho	594	476	80.1%	192	32.3%	19.9%
Malawi	140	106	76%	50	47%	24%
Mauritius	9.28	8.8	94.8%	8.4	95.5%	5.2%
Mozambique	192	190	87%	92	55%	13%
Namibia	471	363	77%	208	57%	23%
Seychelles	21.9	19.6	89.5%	11.5	58%	10,5%
S. Africa	672.1	569.9	84%	264.3	47%	16%
Swaziland	920	765	83%	285	31%	17%
Tanzania	138	106	77%	57	54%	23%
Zambia	373	253	68%	97	38%	32%
Zimbabwe	317	293	77%	93	32%	23%

Source: TB reports from SADC MSs to SADC Secretariat

1.3 HIV Burden in Tuberculosis patients 2010

Country	No. New TB Notifications	No. Tested for HIV	% tested	No. +ve	% +ve
Angola	42,310	4896	11.5%	458	1.0%
Botswana	6560	5216	79.5%	3384	64.9%
DRC	110,032	28,997	26%	5273	18%
Lesotho	11155	11005	83.8%	8459	76.9%
Malawi	22,536	19,855	88%	12,476	63%
Mauritius	116	110	95%	8	7.3%
Mozambique	46,174	40,554	88%	24,574	60.6%
Namibia	10,103	9534	94.3%	5227	54.8%
Seychelles	19	19	100%	2	10.5%
S. Africa	396,554	213,006	54%	128,457	60%
Swaziland	9706	5511	58%	4431	80%
Tanzania	63,543[1]	56,849	90%	21,662	38%
Zambia	48,616[2]	40,704	83%	26,571	65%
Zimbabwe	47,685	38,047	80%	28,662	75%

Source: TB reports from SADC MSs to SADC Secretariat

21 Shows both new and retreatment cases
22 Shows both new and retreatment cases

1.4 Drug Resistance burden (MDR/XDR) 2010

Country	No. MDR cases detected 2010	Cumulative MDR cases	No. on treatment	No. XDR cases detected 2010	Cumulative XDR cases	Years Drug Resistance Surveys conducted	Source of drugs for treatment Gvt/GF/ Donors
Angola	3	7	7	0	0	-	Gvt
Botswana	107	461	92	2	5	1995, 1999, 2002, 2008	Gvt
DRC	96	189	159	0	0	2004	Gvt
Lesotho	132	527	117	0	3	2008	UNITAID, GF
Malawi	40	144	33	0	0	2010-2011	GF
Mauritius	2	0	2	0	0	-	Gvt
Mozambique		505	199	0	2	2007-8	Donors
Namibia	214	806	214	8	48	2008-9	Gvt
Seychelles	0	0	0	0	0	0	Gvt
S. Africa	7,386	16,456[3]	5,402	511	978[4]	2001	Gvt
Swaziland	326	776	541	4	9	2009	Gvt, GF
Tanzania	77	157	33	-	-	2007	GF/GDF
Zambia	43	-	43	-	-	2007/8	Gvt, GF
Zimbabwe	33	56	27	0	0	planned	GF, CDC, MSF, WHO, TB Care

Source: TB reports from SADC MSs to SADC Secretariat

23 2009-2010 only
24 2009-2010 only

2. Performance of National Tuberculosis Programmes (NTP's)

2.1 Cohort analysis results of treatment outcome (Cases notified 2009)

Country	Treatment success new SS+ cases (2009 cohort)	Treatment success all cases registered 2009	% Died*	% Defaulted*	% Transferred out*	% Treatment failures*
Angola	72	73	3.5	17.7	4.5	1.8
Botswana	77.7	74.3	9.4	5.4	4.4	1.9
DRC	88	87	4	3	2	1
Lesotho	70.1	44.7	10.8	4.7	1.8	2.4
Malawi	88	84	10	3	2	1
Mauritius	88	88	4.3	4.3	3.4	0
Mozambique	85.5	N/A	9	3.2	N/A	N/A
Namibia	85	80	8	5	3	3
Seychelles	N/A	N/A	1	0	16	0
S. Africa	73	67	8	7	17	1
Swaziland	69	46	12	9	3	3
Tanzania[5]	88	N/A	5	2	3	0.2
Zambia[6]	87	N/A	5	3	4	1
Zimbabwe	77	77	10	7	6	N/A

Source: TB reports from SADC MSs to SADC Secretariat

**Refers to all cases registered 2009*

25 *All Tanzania figures refer to new cases in 2010*
26 *Outcomes refer to new SS+ Cases from 2009 only*

2.2 TB Laboratory services in SADC: Coverage of laboratory services 2010

			TB LABORATORY SER VICES 2010			
COUNTRY	POPULATION	Number of labs working in NTP Microscopy centres	Pop per centre	Culture centres	DST 1st line	DST 2nd line
Angola	18,081,000	147	1:180,000	2	2	0
Botswana	1,822,858	56	1:32,551	1	1	0
DRC	71,102,661	1460	1:48,700	1	1	1
Lesotho	1,876,663	17	1:110,391	1	1	0
Malawi	14,533,011	216	1:67,375	4	1	0
Mauritius	1,250,000	1	1:1,250,000	1	1	0
Mozambique	21,876,855	433	1:50,524	2	2	0
Namibia	2,143,411	31	1:69,142	1	1	0
Seychelles	86,525	2	1:43,262	1	0	0
S. Africa	49,991,300	256	1:195,278	15	15	15
Swaziland	1,055,506	14	1:75,393	2	1	0
Tanzania	43,187,823	900	1:47,986	3	1	0
Zambia	13,046,508	220	1:59,302	3	3	0
Zimbabwe	12,595,418	200	1:6,300	2	2	0

Source: TB reports from SADC MSs to SADC Secretariat

3. Support Services (Financing, Human Resources etc.)

3.1 Financing: To determine financing and sustainability 2010

		Source of funding for NTP				
Country	**NTP Budget in USD**	**Government %**	**Global Fund %**	**Other major donor %**	**Others %**	**Gap %**
Angola	N/A					
Botswana	14,524,998	43	8	43	-	7
DRC	64,547,438	2.6	14	12.7	-	70.5
Lesotho[7]	N/A					
Malawi	9,666,667	23.3	29.2	2.0	-	45.4
Mauritius	N/A	100			-	
Mozambique	N/A					
Namibia	27,100,000	49.8	14.4	8.5	-	27.3
Seychelles	N/A					
S. Africa	386,431,953	77	23	-	-	-
Swaziland	27,684,325	57	24	7	-	12
Tanzania	N/A					
Zambia	N/A					
Zimbabwe	N/A					

Source: TB reports from SADC MSs to SADC Secretariat

 TB funding from Government subsumed in Disease Control budget

3.2 Human Resources for NTP 2010

Country	National Manager NTP	No. professional staff in central NTP office	% Provinces or Regions with TB Coordinators	% Districts with TB Coordinators
Angola	yes	5	100%	89%
Botswana	yes	17	n/a	100
DRC	yes	65	100%	0**
Lesotho	yes	5	n/a	100
Malawi	yes	16	100%	100%
Mauritius	yes	25	100	100
Mozambique	yes	5	100%	100%
Namibia	yes	4	100%*	100%*
Seychelles	0	0	0	0
S. Africa	yes	11	100%	83%
Swaziland	yes	10	100%	100%
Tanzania	yes	22	100%	100%
Zambia	yes	3	100%	100%
Zimbabwe	yes	8	100%	100%

Source: TB reports from SADC MSs to SADC Secretariat

** Performing other duties as well*

*** Tuberculosis control integrated with other services in the 515 health zones*

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