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Jambiani School, United Republic of Tanzania (Zanzibar)
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### Abbreviations and acronyms

<table>
<thead>
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACT</td>
<td>artemisinin-based combination therapy</td>
</tr>
<tr>
<td>AIM</td>
<td>Roll Back Malaria Partnership Action and investment to defeat malaria 2016–2030</td>
</tr>
<tr>
<td>E8</td>
<td>Elimination 8 (Angola, Botswana, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe)</td>
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<tr>
<td>GTS</td>
<td>WHO Global technical strategy for malaria 2016–2030</td>
</tr>
<tr>
<td>IPTp</td>
<td>intermittent preventive treatment in pregnancy</td>
</tr>
<tr>
<td>IRS</td>
<td>indoor residual spraying</td>
</tr>
<tr>
<td>LLIN</td>
<td>long-lasting insecticidal net</td>
</tr>
<tr>
<td>RDT</td>
<td>rapid diagnostic test</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern African Development Community</td>
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<tr>
<td>SDG</td>
<td>Sustainable Development Goal</td>
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United Republic of Tanzania (Zanzibar)
Foreword

The Southern Africa Development Community (SADC) is a global leader in its commitment to ending malaria and the devastating burden it places on communities in the region. Through the SADC Protocol for Health (1999) to the SADC Malaria Strategic Framework (2007–2015), the SADC Malaria Elimination Framework and the SADC Malaria Advocacy and Communication Framework, all Member States are committed to working together to reduce malaria incidence in the region.

During the past 15 years, unparalleled support from ministers of health, heads of state, partners, donors, researchers and affected communities has contributed to a substantial reduction in the malaria burden and transmission across the SADC region. There have been encouraging increases in access to malaria diagnostics and treatment and concerted efforts to improve surveillance. These achievements resulted in a 24% decrease in malaria incidence and a 51% decrease in the number of malaria deaths in the region between 2000 and 2015.

Despite these efforts, malaria remains a severe threat to economic and social development in the SADC. Several malaria outbreaks occurred in 2016–2017, sparked by climatic conditions favourable for transmission. The outbreaks were a tragic reminder of the effects of malaria on communities, and it is therefore imperative to ensure that affected communities have universal access to malaria prevention, diagnosis and treatment, in line with the vision outlined by the Sustainable Development Goals (SDGs), the WHO Global technical strategy for malaria 2016–2030 (GTS), WHO’s Framework for malaria elimination and the Roll Back Malaria Partnership’s Action and investment to defeat malaria 2016–2030 (AIM).

It is in this new context that the SADC Malaria Report 2017 was prepared. It is intended to provide an update of progress on malaria control and elimination in the SADC region between January 2015 and June 2017, also highlighting the challenges and making related recommendations. It also serves as an advocacy tool to unite global and regional stakeholders with communities to achieve the 2030 malaria elimination goal.

Ending malaria by 2030 will require persistent efforts. It is essential to ensure that malaria surveillance, diagnosis and treatment remain strong and that vector control and behaviour change are strengthened, particularly in anticipation of climatic conditions conducive to malaria transmission in 2017–2018. It will require sustained domestic financing and innovative solutions to fill gaps in donor funding. The recommendations in the report will provide direction to countries, the region and the international community in mobilizing resources, strengthening collaboration between countries and among sectors and galvanizing support to reach the 2030 target of global elimination of malaria. Acting with urgency and determination, we can defeat this disease once and for all, in anticipation of a malaria-free world.
LLIN distribution in Sofala Province, Meringue District (Mozambique)
Executive summary

Remarkable progress has been made in the SADC in the fight against malaria, with scaling-up of interventions by Member States towards universal access. This has been made possible by strong commitment from governments, which resulted in a 30% increase in domestic financing for malaria between 2014 and 2015, and strong partnerships with other stakeholders. In 2016, the burden of malaria in the SADC region was about 47 million cases in a population of 275 million people at risk.

Malaria interventions in the region include surveillance, diagnosis and treatment, vector control with indoor residual spraying (IRS) and distribution of long-lasting insecticidal nets (LLINs), health promotion and communication for behaviour change, including aspects of community engagement. In 2016, the case confirmation rate was > 85% in 10 of the 11 countries in which this is measured, and in 7 countries > 95% of uncomplicated cases received artemisinin-based combination therapy (ACT). All countries achieved a rate of complete reporting of ≥ 80%; however, coverage with vector control did not meet the target of 80% of the population, which was reached by 6 of the 9 countries that reported IRS coverage and only 3 of the 9 countries and areas that distribute LLINs.

Cross-border and regional initiatives have been established in the SADC region to address malaria transmission among mobile and migrant populations. These include the E8 initiative for elimination of malaria in four countries (Botswana, Namibia, South Africa and Swaziland) and pre-elimination in an additional four countries (Angola, Mozambique, Zambia and Zimbabwe); and the Mozambique–South Africa–Swaziland (MOSASWA) cross-border initiative for elimination in South Africa and Swaziland and pre-elimination in Mozambique. These two initiatives are complementary.

Malaria continues to affect communities in regions of high, medium and low transmission, and reintroduction is a threat in countries that no longer report local transmission (Lesotho, Mauritius and Seychelles) as well as countries outside the SADC. In 2016, the incidence of malaria in high-transmission areas (Angola, Democratic Republic of the Congo, Madagascar, Malawi, Mozambique, United Republic of Tanzania, Zambia and Zimbabwe) ranged from 11 to 381 malaria cases per 1000 population, with corresponding mortality rates of 1.5–39 per 100 000 population. In areas of medium and low transmission (Botswana, Namibia, South Africa, Swaziland), the malaria transmission rate was 0.3–9.7 cases per 1000 population, with mortality rates of 0.1–2.4 per 100 000 population. In Mauritius, where there is no local malaria transmission, there were 25 cases and no malaria-related deaths.

Most SADC Member States experienced malaria outbreaks in 2017. The outbreaks were triggered by favourable climatic conditions for malaria transmission, exacerbated by suboptimal coverage with vector control interventions due to insufficient funds for IRS, LLINs and larval source management; inadequate preparedness and response protocols; and delays in procurement of commodities.

The climate forecast for 2017–2018 is for normal to below-normal rainfall during most of the period October–December 2017 and normal to above-normal rainfall during January–March 2018. The northernmost parts of the Democratic Republic of the Congo, northern United Republic of Tanzania, the islands states, eastern Madagascar and the south-eastern contiguous SADC region are likely to receive normal to above-normal rainfall throughout the 2017–2018 rainy season. This prediction is similar to that for January–March 2016–2017, indicating the likelihood of similar malaria transmission patterns in the first quarter of 2018. Member States should take heed and ensure that effective epidemic preparedness and response measures are in place before then.
Executive summary

Recommendations

Member States

1. Countries should ensure that at-risk populations have universal access to high-quality malaria case management, including artesunate treatment for severe malaria, regular training of health care workers and community management of malaria programmes.

2. All countries should monitor drug efficacy regularly.

3. All countries are encouraged to conduct annual reviews and planning with all stakeholders, including those in districts, to ensure adequate preparedness for each malaria season.

4. Countries are encouraged to strengthen vector control, especially in areas of entomological surveillance, including monitoring the quality of IRS, determining the prevalence of insecticide resistance and investigating the biology of vectors.

5. All countries, regardless of the level of malaria transmission, should strengthen malaria surveillance, when possible in integrated systems, and rigorously investigate potential drivers of transmission to ensure the completeness and timeliness of data.

6. Core programme interventions, such as vector control and case management, should be accompanied by appropriate communication for changing behaviour to encourage use of the interventions and ensure appropriate health-seeking. The quality of such activities should be evaluated to provide input for future high-impact communication.

7. The malaria programmes in all Member States are encouraged to work with national meteorological bureaux and the SADC Climate Services Centre to improve their epidemic preparedness and response. Additionally, the SADC communicable diseases centre should include malaria outbreaks in their mandate.

8. All malaria-endemic countries should increase their ownership of their malaria programmes by increasing their financial contributions.

9. Coverage with all key prevention, diagnostic and treatment services should be extended to target populations in cross-border communities, including through cross-border referral systems.

10. In collaboration with WHO and other partners, Member States should review and adapt lessons from programmes for successful elimination, in the SADC region, other regions in Africa, the Asia-Pacific region and the Americas.

SADC Secretariat

11. Facilitate appointment of a malaria focal person at the SADC to coordinate all malaria activities and to review and update the SADC Malaria Burden Reduction and Elimination Strategic Framework, which ended in 2015.

12. In collaboration with Member States, pursue pooled procurement and warehousing of insecticides, rapid diagnostic tests, malaria medicines and other relevant commodities to reduce prices and secure supplies for malaria outbreaks in the region.
Des progrès remarquables ont été accomplis en matière de lutte contre le paludisme dans la région de la Communauté de développement de l’Afrique australe (SADC), les États membres ayant notamment intensifié les interventions antipaludiques sur la voie d’un accès universel. Cette intensification a été possible grâce à un engagement fort de la part des gouvernements concernés, lequel s’est traduit par une augmentation de 30 % des financements nationaux pour la lutte contre le paludisme entre 2014 et 2015, et par la mise en place de partenariats solides avec d’autres parties prenantes. En 2016, le poids du paludisme dans la région SADC représentait près de 47 millions de cas pour une population totale à risque de 275 millions.

Les interventions antipaludiques dans la région SADC incluent la surveillance, le diagnostic et le traitement du paludisme, la lutte antivectorielle par le biais de la pulvérisation intradomiciliaire d’insecticides à effet rémanent (PID) et la distribution de moustiquaires imprégnées d’insecticide longue durée (MILD), la promotion de la santé et la communication incitant au changement des comportements sociaux, y compris les aspects d’engagement communautaire. En 2016, le taux de confirmation des cas dépassait 85 % dans 10 des 11 pays où cet indicateur était utilisé. Dans sept pays, plus de 95 % des cas de paludisme sans complications ont reçu une combinaison thérapeutique à base d’artémisinine (ACT) et, en matière de surveillance, tous les pays ont atteint un taux de déclaration des cas d’au moins 80 %. Néanmoins, la couverture des interventions de lutte antivectorielle n’a pas été à la hauteur des objectifs. En effet, sur les neuf pays ayant communiqué des données de couverture en PID, seuls six ont atteint le taux minimum de 80 % de la population ciblée et, sur les neuf pays et territoires distribuant des MILD, seuls trois ont atteint l’objectif de couverture fixé à 80 %.


Que l’intensité de transmission soit forte, modérée ou faible, le paludisme continue d’avoir un impact négatif sur la population de la région SADC. Même dans les pays où la transmission locale a été interrompue (Lesotho, Maurice et Seychelles pour la région SADC), sa réintroduction reste une menace. En 2016, l’incidence du paludisme dans les pays à forte transmission (Angola, Madagascar, Malawi, Mozambique, République démocratique du Congo, Tanzanie, Zambie et Zimbabwe) était comprise entre 11 cas pour 1 000 habitants et 381 cas pour 1 000, avec un taux de mortalité associée de 1,5 à 39 décès pour 100 000 habitants. Dans les pays à transmission modérée et faible (Afrique du Sud, Botswana, Namibie et Swaziland), l’incidence allait de 0,3 cas de paludisme pour 1 000 habitants à 9,7 pour 1 000, avec un taux de mortalité associée compris entre 0,1 et 2,4 décès pour 100 000 habitants. À Maurice, où la transmission locale du paludisme a été interrompue, 25 cas de paludisme ont été rapportés, et aucun décès associé n’a été enregistré.

En 2017, la plupart des États membres de la SADC ont dû faire face à des épidémies de paludisme qui peuvent s’expliquer par des conditions climatiques propices à la transmission. Elles ont aussi été aggravées par une couverture sous-optimale des principales interventions, notamment une faible utilisation des MILD, des déficits de financement pour la PID, les MILD et la gestion des gîtes larvaires, mais aussi par des protocoles de
préparation et d’intervention inadaptés, et des retards d’approvisionnement en produits antipaludiques.

D’après les prévisions climatiques pour 2017/18, les précipitations seront normales ou inférieures à la normale pendant quasiment tout le dernier trimestre 2017, et normales ou supérieures à la normale de janvier à mars 2018. Les régions les plus au nord de la République démocratique du Congo, la partie septentrionale de la Tanzanie, les états insulaires, la partie orientale de Madagascar et le sud-est de la région SADC devraient enregistrer des précipitations normales ou supérieures à la normale pendant la saison des pluies 2017/18. Cette prédiction est similaire à celle de 2016/17 (pour janvier, février et mars), ce qui suggère le même schéma de transmission au cours du premier trimestre 2018. Les États membres doivent donc tenir compte de cette analyse et s’assurer que des mesures efficaces sont en place suffisamment tôt pour prévenir les épidémies et, si nécessaire, y répondre.

Like 70% of the children in her class, Fortunne (age 13) caught malaria several months ago. After being treated in hospital and cured, she explains to her class how to avoid being bitten by mosquitoes that cause malaria. Her entire family now sleeps under an insecticide-treated net. Kimpese, Bas Congo (Democratic Republic of the Congo).
Recommandations

États membres

1. Les pays doivent s’assurer que l’ensemble de la population à risque reçoive des soins antipaludiques de qualité, y compris pour le traitement du paludisme sévère par l’artésunate. Les pays doivent aussi s’assurer de la formation régulière des agents de santé et de la gestion au niveau communautaire des programmes de lutte contre le paludisme.

2. Tous les pays doivent régulièrement effectuer des études de suivi de l’efficacité des médicaments.

3. Tous les pays sont encouragés à effectuer des revues annuelles et des sessions de planification avec l’ensemble des parties prenantes, districts compris, pour s’assurer d’une préparation adéquate à chaque saison de transmission du paludisme.

4. Les pays sont encouragés à renforcer la lutte antivectorielle, en particulier dans les zones de surveillance entomologique, y compris à continuer d’évaluer la qualité de la PID, à définir la prévalence de la résistance aux insecticides et à entreprendre plus de recherches sur la biologie des vecteurs.

5. Tous les pays, indépendamment du niveau de transmission du paludisme, doivent renforcer leurs systèmes de surveillance, si possible au sein de systèmes intégrés. Ils sont encouragés à utiliser de manière rigoureuse leurs systèmes de surveillance afin de déterminer les facteurs potentiels de transmission dans la région. Cet effort permettra d’améliorer la complétude et la promptitude des données.

6. Les principales interventions programmatiques, telles que la lutte antivectorielle et la prise en charge des cas, doivent être appuyées par des activités de communication incitant au changement des comportements de façon à encourager l’utilisation de ces interventions et à promouvoir des comportements sains. Par ailleurs, la qualité des activités de communication incitant au changement des comportements sociaux doit être évaluée dans l’optique d’augmenter l’impact de ces canaux de communication.

7. Les programmes de lutte contre le paludisme de tous les États membres sont encouragés à travailler avec les services météorologiques nationaux et le Centre des services climatiques de la SADC pour améliorer, grâce aux prévisions, leur préparation aux épidémies et leurs capacités de réponse. En outre, le Centre régional SADC sur les maladies transmissibles doit avoir une thématique spécifique sur les épidémies de paludisme.

8. Tous les pays d’endémie palustre doivent s’approprier plus encore leur programme de lutte contre le paludisme, notamment en augmentant leur contribution financière à la principale cause de morbidité et de mortalité dans la région SADC, à savoir le paludisme.

9. Les pays doivent étendre la couverture des principaux services de prévention, de diagnostic et de traitement aux populations ciblées au sein des communautés transfrontalières, y compris par le biais des systèmes d’orientation vers des services transfrontaliers.

10. En collaboration avec l’OMS et les parties prenantes concernées, les pays doivent revoir et adopter les bonnes pratiques en matière d’élimination du paludisme dans la région SADC, mais aussi ailleurs en Afrique, dans la région Asie-Pacifique, dans la région Amériques, etc.

Secrétariat SADC

11. Faciliter la nomination d’un point focal au niveau de la SADC pour coordonner toutes les activités antipaludiques, y compris la revue et la mise à jour du Cadre stratégique pour la réduction du poids du paludisme et son élimination dans la région SADC, qui a pris fin en 2015.

12. Explorer, en collaboration avec les États membres, les possibilités d’achats et de stockage en commun des insecticides, des tests de diagnostic rapide, des médicaments antipaludiques et d’autres produits antipaludiques de façon à obtenir des prix plus intéressants et à assurer un approvisionnement ininterrompu lors des épidémies de paludisme dans la région.
A SADC registrou progressos notáveis na luta contra a malária, através da intensificação das intervenções por parte dos Estados‑Membros, no sentido de atingir o acesso universal. Isso só foi possível através do forte empenho dos governos, que resultou num aumento de 30% do financiamento nacional para a malária entre 2014 e 2015, e de fortes parcerias com outras partes interessadas. Em 2016, o peso da malária na região da SADC foi de, aproximadamente, 47 milhões de casos numa população de 275 milhões de pessoas em risco. As intervenções contra a malária na região incluem a vigilância, o diagnóstico e tratamento, o controlo dos vectores com a pulverização intra‑domiciliária (PIDOM) e a distribuição de redes mosquiteiras impregnadas com insecticida de longa duração (REMILD), promoção da saúde e comunicação para mudança de comportamento, incluindo o envolvimento das comunidades. Em 2016, a taxa de casos confirmados foi superior a 85%, em 10 de 11 países em que este levantamento foi feito, e, em 7 países, mais de 95% dos casos não complicados receberam terapêutica medicamentosa à base de artemisinina (ACT). Todos os países atingiram uma taxa de reporte completa, igual ou superior a 80%; contudo, a cobertura do controlo dos vectores não atingiu a meta de 80% da população, que foi alcançada por 6 dos 9 países que reportaram a cobertura com PIDOM, e apenas 3 dos 8 países e zonas que distribuíram REMILD. Foram criadas iniciativas transfronteiriças e regionais na região da SADC, para reduzir a transmissão da malária entre as populações móveis e migrantes. Entre elas, contam‑se: a iniciativa E8 para a Eliminação da malária em quatro países (Botswana, Namíbia, África do Sul e Swazilândia) e a pré‑eliminação em outros quatro países (Angola, Moçambique, Zâmbia e Zimbabwe), e a iniciativa transfronteiriça entre Moçambique–África do Sul–Swazilândia (MOSASWA) para a eliminação na África do Sul e na Suazilândia e a pré‑eliminação em Moçambique. As duas iniciativas referidas são complementares. A malária continua a afectar as comunidades das regiões de transmissão elevada, média e baixa e a sua reintrodução constitui uma ameaça nos países que deixaram de notificar a transmissão local (Lesoto, Maurícia e Seicheles), assim como nos países que não fazem parte da SADC. Em 2016, a incidência da malária nas zonas de elevada transmissão (Angola, República Democrática do Congo, Madagáscar, Malawi, Moçambique, República Unida da Tanzânia, Zâmbia e Zimbabwe) oscilava entre 11 a 381 casos de malária por 1000 habitantes, com taxas de mortalidade correspondentes de 1,5–39 por 100 000 habitantes. Nas zonas de média e baixa transmissão (Botswana, Namíbia, África do Sul e Suazilândia), a taxa de transmissão da malária foi de 0,3–9,7 casos por 1000 habitantes, com taxas de mortalidade de 0,1–2,4 por 100 000 habitantes. Nas Maurícias, onde não existe transmissão local de malária, registaram‑se 25 casos e nenhuma morte por malária. A maior parte dos Estados‑Membros da SADC teve surtos de malária em 2017. Esses surtos foram provocados por: condições climáticas favoráveis à transmissão da malária, exacerbadas por uma cobertura insuficiente das intervenções de controlo dos vectores, devido à escassez de fundos para a PIDOM, REMILD e gestão das fontes larvares; protocolos inadequados de preparação e resposta; e demoras na aquisição de material. As previsões meteorológicas para 2017–2018 são de pluvisidade normal e inferior ao normal durante quase todo o período de Outubro–Dezembro de 2017 e normal e superior ao normal durante Janeiro–Março de 2018. As regiões mais a norte da República Democrática do Congo, norte da República Unida da Tanzânia, os estados insulares, o leste de Madagáscar e a região sudeste da SADC terão provavelmente pluvisidade normal a superior ao normal durante toda a estação das chuvas de 2017–2018. Esta previsão é semelhante à de Janeiro–Março de 2016–2017, indicando a probabilidade de padrões semelhantes de transmissão da malária no primeiro trimestre de 2018. Os Estados‑Membros deverão ter isto em conta e tomar medidas eficazes de preparação e resposta à epidemia antes dessa altura.
Recomendações

Estados-Membros

1. Os países deverão assegurar-se de que as populações em zonas de risco terão acesso universal a tratamento de alta qualidade para o tratamento dos casos de malária, incluindo o tratamento com artesunato para a malária grave, formação regular dos profissionais de saúde e programas de tratamento de malária nas comunidades.

2. Todos os países deverão monitorizar regularmente a eficácia dos medicamentos.

3. Recomenda-se que todos os países procedam a revisões e planeamento anual com todas as partes interessadas, incluindo os distritos, para garantir uma preparação adequada para cada época de malária.

4. Recomenda-se aos países que reforcem o controlo dos vectores, especialmente nas zonas de vigilância entomológica, incluindo a monitorização da qualidade da PIDOM, a determinação da prevalência da resistência aos inseticidas e a investigação da biologia dos vectores.

5. Todos os países, independentemente do nível de transmissão, deverão intensificar a vigilância da malária, se possível em sistemas integrados, e investigar com rigor os potenciais determinantes da transmissão, para garantir que os dados serão completos e actualizados.

6. As intervenções de programas essenciais, como o controlo dos vectores e o manejo de casos, devem ser acompanhadas de uma comunicação apropriada para a mudança de comportamento, de modo a encorajar o uso de intervenções e garantir uma procura apropriada de cuidados de saúde. A qualidade das referidas actividades deverá ser avaliada, com vista a constituírem um contributo importante para uma comunicação futura de forte impacto.

7. Os programas de malária em todos os Estados-Membros são encorajados a trabalhar com os serviços meteorológicos nacionais e o Centro de Serviços Meteorológicos da SADC pra melhorar a sua preparação e resposta à epidemia. Adicionalmente, o centro de doenças transmissíveis da SADC deverá incluir os surtos de malária nas suas atribuições.

8. Todos os países endêmicos de malária devem aumentar as suas contribuições financeiras para aumentarem a apropriação dos seus programas de malária.

9. A cobertura de todos os principais serviços de prevenção, diagnóstico e tratamento deve ser alargada às populações-alvo das comunidades transfronteiriças, incluindo as transferências.

10. Em colaboração com a OMS e outros parceiros, os Estados-Membros deverão rever e adaptar as lições aprendidas com os programas, para uma eliminação bem sucedida, na região da SADC, outras regiões de África, região da Ásia-Pacífico e a das Américas.

Secretariado da SADC

11. Facilitar a nomeação de um ponto focal para a malária na SADC, com a função de coordenar todas as actividades da malária e rever e actualizar o Quadro Estratégico da SADC para Redução e Eliminação do peso da malária, que expirou em 2015.

12. Em colaboração com os Estados-Membros, proceder à aquisição agrupada e ao armazenamento dos inseticidas, testes de diagnóstico rápido, medicamentos e outros produtos importantes para a malária, com vista a reduzir os preços e garantir material suficiente para fazer frente os surtos de malária na região.
What for? He says, I can see animals, lions, tigers, and zebras. But Zebras look much.” Fazma says. Indeed too.

Jambiana School (United Republic of Tanzania, Zanzibar)
1. Introduction

The Southern African Development Community (SADC) is a regional organization established in 1992 with the aim of supporting economic development among its 15 Member States through regional integration. In recognition of the close link between health and economic growth, SADC has made the health of its populations a priority and calls upon Member States to harmonize their goals, policies, guidelines, protocols and interventions for malaria control and elimination.

Since 2000, substantial increases in funding have improved the availability of life-saving malaria interventions, which have resulted in marked reductions in malaria morbidity and mortality. WHO estimated in 2016 that, between 2010 and 2015, the global incidence of and mortality rate from malaria decreased by 21% and 29%, respectively.1 If the milestones of the WHO Global technical strategy for malaria 2016–2030 (GTS) of a 40% reduction in both case incidence and mortality rate by 2020 are to be achieved, however, reductions in high-burden countries must be accelerated. While most investments and activities have been directed to high-burden SADC countries, all SADC Member States have made impressive progress against malaria due to political commitment, more domestic and external funding for malaria activities and wide-scale implementation of malaria interventions.

The estimated population at risk for malaria in the SADC region is 275 million, and the reported number of malaria cases in 2016 was about 47 million. Malaria transmission in the region is heterogeneous, ranging from low to moderate to high transmission. In the high-transmission areas (Angola, Democratic Republic of the Congo, Madagascar, Malawi, Mozambique, United Republic of Tanzania, Zambia and Zimbabwe), the incidence ranged from 11 to 381 malaria cases per 1000 population, with corresponding mortality rates of 1.5–39 malaria deaths per 100 000 population. In Mauritius, where there is no local malaria transmission, there were 25 malaria cases and no malaria-related deaths.

Over the past few years, Member States have committed themselves to reducing malaria morbidity and mortality in the SADC Protocol on Health, the Malaria Strategic Plan 2007–2015, the Malaria Elimination Framework and the Malaria Advocacy and Communication Strategy.

This SADC Malaria Report 2017 is the first regional malaria report to be produced since the SDGs were set in 2015 and since the release of the WHO and Roll Back Malaria Partnership Action and Investment to defeat malaria 2016–2030 (AIM). The GTS target is a 90% reduction in malaria incidence and mortality rates globally by 2030, as compared with 2015 levels.

The GTS lists three "pillars" for achieving these goals: (i) ensure universal access to malaria prevention, diagnosis and treatment; (ii) accelerate efforts towards elimination and attainment of malaria-free status; and (iii) make malaria surveillance a core intervention. AIM advocates for inclusion of malaria in the broader development agenda and stresses that malaria is an issue not only of health but also of development, economies, politics, security, the environment, agriculture, biology and society.

The structure and content of the SADC malaria report 2017 are based on the SADC Protocol on Health, AIM, GTS and the SDGs. Its aims are to provide deeper insight into the malaria situation in the SADC region and to serve as a reference for both malaria technicians and policy-makers. The report is based on national and district data received directly from Member States, collected for this purpose and as collected by WHO. It supplements but does not duplicate the WHO World Malaria Report.

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malaria report. It describes current issues, including the malaria outbreaks in the 2016-2017 malaria season and regional and cross-border initiatives and partnerships. The report covers the period January 2015–June 2017, although data from before January 2015 are used to contextualize data and for trend analyses. The primary objectives are to update information on malaria epidemiology and intervention coverage and to summarize progress made in reducing the burden and transmission of malaria. Regional trends in morbidity and mortality and regional performance against SADC malaria indicators are also presented.

The indicators used to measure performance against the SDGs, GTS, AIM and the SADC Strategy are: malaria incidence, malaria mortality, LLIN coverage, populations targeted and protected by IRS, proportions of malaria cases at outpatient and inpatient departments and the proportion of all deaths that are due to malaria.

The report has four annexes. Annex 1 provides profiles of the 12 Member States with indigenous malaria transmission; Annex 2 provides a short glossary and lists the indicators for all Member States in the most recent year for which data were available; Annex 3 summarizes the global and regional goals and targets for malaria; and Annex 4 lists all national and international partners in the fight against malaria in the SADC region.

United Republic of Tanzania (Zanzibar)
2. Current situation of malaria in the SADC region

WHO estimates that approximately 275 million people in the SADC region were at risk for infection with malaria in 2016 (data from national malaria control programme reports). This reflects impressive progress since 2000, as the number of new cases decreased by 24% and the number of malaria deaths by 51% between 2000 and 2015. Between 2010 and 2015, however, the number of new malaria cases increased by 16% and of malaria deaths by 24%.

2.1 Progress towards elimination targets and prevention of re-establishment

Of the 15 SADC Member States, Lesotho, Mauritius and Seychelles are malaria free, and Botswana, Namibia, South Africa and Swaziland have a malaria incidence between 0 and 10 cases per 1000 population. The remaining eight countries are considered to have moderate or high transmission. Transmission intensity and the malaria burden vary widely between and within countries in the region.

2.1.1 Impact on malaria incidence and mortality

Malaria incidence

In 2016, the reported incidence\(^3\) of malaria in the SADC region was 177, ranging from 0.3 cases per 1000 population to 381. Of the 12 countries with on-going transmission, eight (Angola, Democratic Republic of the Congo, Madagascar, Malawi, Mozambique, Namibia, Swaziland and Zambia) reported increased incidences, Botswana reported very little change and South Africa and Zimbabwe reported decreased incidences between 2013 and 2016 (Figs 1 and 2).

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\(^3\) Malaria incidence is the occurrence of illness or disease due to malaria in a person in whom the presence of malaria parasites in the blood has been confirmed by parasitological testing per 1000 people in a given year.
steep increases in malaria incidence in Malawi and Mozambique and mild increases in Angola, Democratic Republic of the Congo, Madagascar and Zambia. Decreases in malaria incidence were also seen in the United Republic of Tanzania (mainland) and Zimbabwe. In low-transmission countries in 2017, increases in malaria case incidence were seen in Namibia and Swaziland and decreases in Botswana, South Africa and the United Republic of Tanzania (Zanzibar).

**Malaria mortality**

In 2016, a total of 60,414 malaria-related deaths were reported in the SADC region, which was a 4% increase over the number in 2013. Angola and the Democratic Republic of the Congo recorded the most deaths in 2016, accounting for 26% and 56% of all those reported, respectively. **Fig. 3** shows that mortality rates (per 100,000 people) decreased in the United Republic of Tanzania (mainland) and in Zambia, increased in Angola and the Democratic Republic of the Congo, while Madagascar, Malawi, Mozambique and Zimbabwe remained stable. Mortality rates were higher (> 20 malaria deaths per 100,000 population) in Angola, Democratic Republic of the Congo and Malawi than in the other SADC countries. In low-transmission countries and areas (Fig. 4), the mortality rate increased in Namibia, remained unchanged in the United Republic of Tanzania (Zanzibar) and decreased in Botswana, South Africa and Swaziland.

Stock-outs of essential malaria diagnostics and treatment and inadequate outbreak preparedness, delayed presentation and misdiagnosis were identified as the main reasons for the increased malaria mortality rates.

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**Fig. 3. Malaria mortality rates (per 100,000 population) in SADC Member States with high or moderate transmission, 2013–2016**

![Malaria mortality rates graph](image)

Data source: Member State annual reports

**Fig. 4. Malaria mortality rates (per 100,000 population) in SADC Member States with low or very low transmission, 2013–2016**

![Malaria mortality rates graph](image)

Data source: Member State annual reports
2.1.2 Implementation of interventions

Malaria case management

Sustained, optimal coverage of affected populations with quality-assured diagnostics and efficacious treatment are fundamental for effective case management. Management prevents mortality and reduces onward transmission but depends strongly on continuous, timely availability of RDTs and ACTs, good supply chain management and good training and supervision.

Parasitological confirmation of suspected cases

A key case management policy in the region is the provision of treatment only after a confirmed diagnosis of malaria. Consequently, all individuals whose symptoms suggest malaria must have a parasitological test. This allows programmes to (i) prescribe the appropriate treatment for a given ailment; (ii) more accurately quantify and map malaria incidence and the spatial distribution of malaria cases; and (iii) verify the absence of malaria in an area undertaking malaria elimination. SADC Member States therefore monitor the percentage of suspected malaria cases that had a parasitological test, with a target of 100%.

Of the 11 countries in which this indicator is recorded, 10 achieved a confirmation rate > 85% by 2016 (Fig. 5). During 2013–2016, Botswana, the Democratic Republic of the Congo and Mozambique increased their confirmation rate by 10%, Angola by 19%, Namibia by 26%, Zambia by 43%, United Republic of Tanzania (mainland) by 47% and Malawi by 64%. These improvements are the result of increased access to RDTs, particularly in remote areas and communities.

Fig. 5. Percentages of cases of suspected malaria in SADC Member States that had a parasitological test, 2013–2016

Data source: Member State annual reports
Malaria treatment

There has been a significant increase in the treatment of uncomplicated malaria with WHO pre-qualified ACTs; 7 Member States had an uptake of ACTs > 95%. A great concern, however, is the low uptake of these highly efficacious drugs in some Member States, which must be addressed urgently. More effort must be made to register and distribute artesunate, a life-saving treatment for severe and complicated malaria, in all countries.

Intermittent preventive treatment in pregnancy

Intermittent preventive treatment in pregnancy (IPTp) is given to pregnant women who live in areas of stable malaria transmission. Of the 15 SADC Member States, eight with high–moderate transmission are implementing IPTp. Fig. 7 summarizes the uptake, as reported in household surveys. The strategy is not used throughout the country in Zimbabwe. Uptake of IPTp has been poor and inconsistent, and most countries did not reach the 60% target. The cost-effectiveness of this intervention should be rigorously evaluated to determine the best way of implementing it in SADC countries.
**Integrated vector management**

The three main interventions within integrated vector management in the region are IRS, LLINs and larval source management. IRS has been the most widely used vector control intervention; however, both LLINs and larval source management are being used with increasing frequency.

**Indoor residual spraying (IRS)**

Currently IRS is conducted in selected geographical areas in most Member States, and the percentage of the targeted population covered is reported annually. Although this critical intervention is planned as an annual activity in the national strategic plans of all malaria-affected Member States, it has not been applied consistently throughout the region (Figs 8 and 9). Of the eight countries for which data were made available in 2016, Zambia had the largest IRS programme in terms of population targeted, followed by Zimbabwe, Namibia and Swaziland. Thus, the largest proportion of the population at risk protected by IRS is in Zambia, where 56% of the population is covered.

Of the nine countries that reported IRS coverage in 2016, only six achieved the minimum target of reaching at least 80% of the targeted population (Fig. 9). If malaria is to be effectively controlled and eliminated in the SADC region, it is imperative that all affected Member States achieve and sustain IRS coverage of at least 80% annually.

**Fig. 8. Percentages of populations at risk in SADC Member States protected by indoor residual spraying, 2016**

![Image of Fig. 8 showing percentages of populations at risk protected by IRS in 2016]

Data source: Member State annual reports
Angola: IRS was not conducted in 2015 and 2016.
Malawi: IRS was not conducted in 2014 and 2016.
Mozambique: Complete data were not provided for 2016, although IRS was conducted.

**Fig. 9. Coverage with indoor residual spraying in SADC Member States, 2013–2016**

![Image of Fig. 9 showing coverage with IRS in SADC Member States from 2013 to 2016]

Data source: Member State annual reports
Angola: IRS was not conducted in 2015 and 2016.
Malawi: IRS was not conducted in 2014 and 2016.
Swaziland: Data not available for 2015 and 2016.
LLIN coverage
In the SADC region, nine countries and areas are currently using LLINs as a core vector control intervention. Although LLINs have been shown to be very effective, coverage in the region has been suboptimal, only Zimbabwe, Malawi and the United Republic of Tanzania (Zanzibar) achieving the 80% coverage target in 2016 (Fig.10). Recent decreases in the prevalence of malaria in Malawi have been attributed largely to increased LLIN coverage.

As LLINs are a core vector control intervention, Member States should make concerted efforts to ensure that they have adequate stocks of LLINs and the manpower to achieve 80% coverage.

Use of LLINs and IRS
Eight Member States reported the rates of use of LLINs and IRS for children under 5 years and pregnant women. As these indicators are collected periodically during malaria indicator surveys, the data are not available for every year. Those available are summarized in Table 1. Malawi, Madagascar and the United Republic of Tanzania (Zanzibar) reached the Abuja target\(^4\) of 60% coverage with LLINs and/or IRS for pregnant women and children under 5 years, with one

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Fig. 10. Coverage with long-lasting insecticidal nets in SADC Member States, 2013–2016

![Graph showing coverage with LLINs in SADC Member States](image)

Data source: Member State annual reports
Democratic Republic of the Congo: Data not available
Madagascar: LLIN target not met since 2013 due to lack of resources

Table 1. Use of LLINs and/or IRS for pregnant women and children under 5 years of age, 2013–2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Year of latest malaria indicator survey</th>
<th>Proportion who slept under an insecticide-treated net the night before the survey or in a dwelling treated by IRS in the past 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Children &lt; 5 years</td>
</tr>
<tr>
<td>Angola</td>
<td>2015</td>
<td>22%</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>2013</td>
<td>56%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>2016</td>
<td>84%</td>
</tr>
<tr>
<td>Malawi</td>
<td>2014</td>
<td>69%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>2015</td>
<td>53%</td>
</tr>
<tr>
<td>Namibia</td>
<td>2013</td>
<td>34%</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland</td>
<td>2016</td>
<td>54%</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>2016</td>
<td>92%</td>
</tr>
<tr>
<td>Zambia</td>
<td>2015</td>
<td>58%</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>2016</td>
<td>32%</td>
</tr>
</tbody>
</table>

Latest data from surveys, which were not conducted annually

country, Madagascar, exceeding the Roll Back Malaria Global Malaria Action Plan target of 80%.

In general, attaining high rates of use of LLINs has been a challenge for Member States, primarily because the intervention depends on the behaviour of the target populations. Given the level of investment in this strategy, Member States are encouraged to determine the causes of low use objectively and more precisely, so that targeted solutions can be found. Community engagement will be a critical factor, and this will require close evaluation of the information, education and communication provided to change behaviour to make them more effective.

In view of the LLIN use rates reported by Member States and the apparent difficulty in changing people’s behaviour to use LLINs, it is highly unlikely that a strategy based on LLINs alone will reduce the level of transmission to make elimination an option. It will be essential to sustain high IRS coverage as a complementary intervention to reduce malaria transmission significantly.

**Malaria surveillance**

In line with the WHO GTS, surveillance is a key intervention throughout the SADC region. It is encouraging to note that all Member States continued to invest in health information management systems during the period under review.

**Completeness of reporting**

All SADC countries had reached a reporting rate ≥ 80%, with most of them surpassing 90% by 2016 (Fig. 11).

**Case investigation**

Case investigation allows countries and regions that are close to eliminating malaria to understand the drivers of malaria transmission and guide the appropriate responses. In 2013, six countries reported on case investigation (Fig. 12): Mauritius consistently investigated all cases during the period, and case investigation has improved in Botswana, Swaziland and the United Republic of Tanzania (Zanzibar).

Case investigations in most of the reporting countries should, however, be strengthened, as only four...
countries (Mauritius, South Africa, Swaziland and Zimbabwe) achieved a rate ≥ 80%. Zimbabwe has been investigating cases in districts targeted for elimination since 2013, while Mauritius has investigated an impressive 100% of its malaria cases in the past 4 years.

**Case classification (local versus imported)**

Case classification in all E8 front-line Member States has greatly improved since 2013, as most countries could classify at least 90% of their reported cases in 2016 (Fig. 13). Improved case investigation rates allow Member States working to eliminate malaria to ascertain the extent of local malaria transmission more accurately.

The importance of maintaining a strong surveillance system to prevent malaria re-establishment is clearly illustrated by the data from Mauritius, which show that, although malaria cases have been imported, strong surveillance has enabled the country to remain malaria-free. As freedom of movement between SADC Member States and those outside the block increases, importation of malaria cases will continue.

In Botswana, Namibia, South Africa and Swaziland, which are nearing malaria elimination, imported cases made up the majority of cases reported, especially in South Africa and Swaziland. Countries with high transmission may also have imported cases, depending on population movements, but they are not recorded.

The test-positivity rate (number of tests positive for malaria out of total number performed) is assumed to decrease as access to care increases. The annual positivity rates are high in Member States with high transmission and relatively low in the four countries that plan to have eliminated malaria by 2020 (Botswana, Namibia, South Africa and Swaziland). While in many countries the annual positivity rate increased during the period, it decreased in Zambia and Zimbabwe.

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**Fig. 13. Local and imported cases of malaria reported in SADC Member States in 2015–2016**

Data source: Member State annual reports
* Seven districts conducted elimination activities in 2013–2014 and 20 districts from 2015 onwards (of a total of 63). In 2015, Zimbabwe had not started case classification in the province targeted for elimination.

**Fig. 14. Annual malaria test-positive rates in SADC Member States, 2013–2016**

Data source: Member State annual reports
2.2 Challenges and lessons learnt

Case management

- Member States implementing IPTp have been unable to achieve the 60% target, even in countries such as Malawi, where IPTp has been used for a long time. The reasons why countries have been unable to achieve high coverage with this cheap intervention should be investigated.

- Deaths due to malaria increased by 4% in the region between 2013 and 2016. This was attributed by many Member States to stock-outs of essential malaria diagnostics and treatment for both uncomplicated and complicated or severe malaria. The impact of the stock-outs was exacerbated by regulatory restrictions on the movement of medical supplies across country borders and limited stocks of buffer by suppliers.

- Procurement of primaquine as a transmission-blocking drug proved to be problematic in most of the Member States planning elimination, and registration within the States made it difficult to purchase the drug from national sources.

Vector control: environmental compliance and concerns

- Member States had inadequate funding to procure adequate insecticide to conduct IRS in all the targeted areas. The countries could therefore not achieve their coverage targets, which may have contributed to the malaria outbreaks in the region.

- Delays in the procurement and delivery of insecticides also limited IRS operations.

- There is lack of guidance on and inadequate resources for IRS waste disposal management.

Surveillance

- Limited human, financial and infrastructure capacity is impeding active case investigation in countries conducting elimination of malaria.

- There is no tool for assessing the efficacy of and responses to case investigations.
2. Current situation of malaria in the SADC region

Mtendere Mission Hospital, Zambia

3.1 Background

Malaria outbreaks have occurred in several SADC countries since 2014, with those in 2017 being the worst. This section reviews epidemiological trends, possible risk factors, challenges in responding to outbreaks, best practices and recommendations for preparedness and response.

Each year, the SADC Climate Services Centre, which provides regional operational services for monitoring and predicting extreme climate conditions, holds the Southern Africa Regional Climate Outlook Forum, at which the weather outlook for the coming season is presented and discussed. At the 20th Forum, held in Harare, Zimbabwe, on 24–26 August 2016, the summary of climate predictions (Fig. 15) showed that, generally, the SADC region was likely to receive normal to above-normal rainfall for most of the period October–November 2016 and January–March 2017; however, northern Angola, northernmost Democratic Republic of the Congo, northern Mozambique, most of the United Republic of Tanzania and the island states of Seychelles and easternmost Madagascar are likely to receive normal to below-normal rainfall during most of the season.

These predictions match those of the Climate Prediction Center of the National Oceanic and Atmospheric Administration in the USA, which forecast above-average rainfall in much of southern Africa and below-average rainfall over parts of central and eastern Africa during the northern hemisphere spring. The WHO Inter-country Support Team for East and Southern Africa shared this outlook with all countries in the SADC to inform their epidemic preparedness and response.

3.2 Disease trends and outbreaks, January–June 2017

SADC countries experienced significant increases in the numbers of malaria cases and deaths in the

Fig. 15. SADC Climate Services Centre rainfall outlook, 2016–2017

Source: SADC Climate Services Centre, 2016.
2016–2017 season over those in the 2015–2016 season, when drought conditions prevailed. Figs 16–18 show the epidemiological trends by transmission category.

Fig. 16 shows regular seasonal changes in incidence between 2015 and 2017, with peaks in March–April 2015, 2016 and 2017 in all high-transmission countries. Mozambique had increasing numbers of cases over the period, with a lower peak in 2015 than in 2017, while in Malawi and Zambia, the peak in 2016 was higher than those in 2015 and 2017. Thus, Angola, Malawi and Zambia had lower peaks in 2017 than Mozambique. In terms of numbers, Angola recorded the largest number of cases to date (4.2 million) in 2016, with a peak in April (583 000 cases), then a steady downward trend during May–September.

### Fig. 16. Malaria incidence rates in high-transmission countries, January 2015–June 2017

![Graph showing malaria incidence rates in high-transmission countries](image)

Data source: Member State annual reports

Fig. 17 shows “noisy” trends in countries with moderate transmission, mainly because they have different seasonal rainfall. Madagascar maintained a downward trend in malaria incidence; even during the adverse weather conditions in 2017, the number of cases did not increase substantially. In the United Republic of Tanzania, seasonal peaks occurred during May–June, that in 2016 being slightly lower than those in 2015 and 2017. In Zimbabwe, the seasonal peak was earlier, in March–May; however, the incidence moved from a high peak in 2015 to a very low peak of 2% in 2016. The peak in 2017 was 7%, which was still lower than that in 2015 (9%).

### Fig. 17. Malaria incidence rates in moderate-transmission countries, January 2015–June 2017

![Graph showing malaria incidence rates in moderate-transmission countries](image)

Data source: Member State annual reports
In the low-transmission countries, the increase in case incidence was much greater in 2017 than in 2015–2016 (Fig. 18). Botswana saw the greatest increase over previous levels, and an outbreak was declared. The trend in malaria cases in late February 2017 deviated from those in previous years, as it continued to climb, exceeding the numbers recorded in the previous 5 years. In South Africa, the number of cases was higher than in 2016 but lower than that reported during the outbreak in 2014–2015. By March 2017, 9478 malaria cases and 76 deaths had been reported, as compared with 6385 malaria cases and 58 deaths in the 2015–2016 season. A peak was observed in April 2017. Namibia declared an outbreak, with significantly higher numbers of cases reported in 2017 than in the previous two years; 58% of cases were recorded in one region, Kavango. Peaks were recorded in March and April 2017, with about the same number of cases over these two months alone as during the full year 2016.

Fig. 18. Malaria incidence rates in countries with low and very low transmission rates, January 2015–June 2017

Fig. 19 shows the numbers of malaria cases in low-transmission countries, by month. In South Africa, an upsurge in numbers occurred during April 2017, particularly in Mopani and Vhembe districts of Limpopo Province. This coincided with the Easter long weekend and increased travel within South Africa and to adjacent malaria-endemic countries. The Limpopo Department of Health confirmed an increase in the number of malaria cases and deaths, with 4092 cases and 33 deaths reported by March 2017, as compared with 1543 cases and 18 deaths in the 2015–2016 season. Most cases were reported from Greater Giyani (Mopani) and Thulamela (Vhembe) municipalities. In Swaziland, a peak was observed in January 2017, which was higher than that in the previous year. The number of cases was within the same range as in previous years, and the country has maintained progress towards elimination.
3.3 Risk factors and drivers of the malaria epidemics

The causes of the malaria epidemics are multiple, as recorded by the WHO mission to Botswana (Box 1). The causes of the malaria epidemics in the region are summarized below.

Issues in health systems and implementation

Several countries reported low coverage with IRS as a result of factors including delayed procurement and recruitment of spraying teams. Furthermore, countries reported inadequate capacity for supervision and microplanning, which result in poor-quality IRS.

Biological risk factors

A combination of favourable climatic and environmental factors, emerging insecticide resistance and possibly changing mosquito behaviour contributed to some of the increase in case numbers in most countries. Resistance to pyrethroids, for example, is widespread in the region, whereas a large proportion of house structures (modern houses) are still sprayed with pyrethroids.

Surveillance systems

Most countries have weak early-warning systems. During the season, although programmes were aware that an unusually heavy rainy season was highly probable, they did not strengthen their epidemic and preparedness response at all levels, including the lowest level possible. This resulted in failure to detect and respond to outbreaks in a timely way. In most countries, reliance on external resources also delayed the response to outbreaks.

Climate and environmental factors

As forecast, countries in the region reported unusually heavy rainfall, which led to flooding. This not only created favourable environmental conditions for malaria transmission (increased vector density and competence) but also led to increased population displacement and limited access to health services.

The prediction of the SADC Climate Services Centre (Fig. 15) for January–March 2018 is similar to that for January–March 2017, indicating the likelihood of similar transmission patterns in the first quarter of 2018. Countries should take heed and plan accordingly.

3.4 Best practices

In 2016, Zimbabwe experienced a year free from outbreaks. One of the strategic objectives of Zimbabwe’s National Strategic Plan is to detect 100% of epidemics within 1 week of onset and to effectively manage 100% of malaria epidemics within 2 weeks of detection. Although no epidemics were reported in Zimbabwe in 2016, epidemic preparedness was continued, including weekly monitoring of surveillance data. Training in integrated disease surveillance and response was given in some epidemic-prone districts, alert and epidemic thresholds were updated based on recent data, in keeping with epidemic preparedness and response protocols, rapid response teams were given updated information, epidemic preparedness and response in provinces and districts was assessed, and partnerships and epidemic control funds were mobilized to support logistics for early outbreak response. Although Zimbabwe experienced malaria epidemics in 2017, it was able to identify epidemic districts and health facilities through its weekly surveillance system and mounted a strong response with its preparedness and response plan.

3.5 Main challenges

The main challenges experienced during the 2016–2017 malaria season were:

- Inadequate annual forecasting of the risks for malaria epidemics and emergencies at national level and communication of the information to districts to allow for timely, targeted prevention and mitigation;
- insufficient weekly tracking of malaria cases in most programmes in the region to allow detection of abnormal rates in time for an appropriate response;
- inadequate response to malaria epidemics and emergencies due to lack of emergency stocks of important malaria commodities and lack of designated malaria and integrated disease outbreak and emergency teams in districts;
- failure to meet the IRS coverage targets (see country data); and
slow responses of national governments to outbreaks and epidemics, mainly because of inadequate funding for the purpose, often due to overreliance on international financing.

### 3.6 Recommendations

In order to manage malaria outbreaks and epidemics, the following recommendations are made for the short and medium term.

- Monitor climatic conditions for early warning and preparedness by obtaining forecasts from national institutions and SADC. Because of the instability of malaria in the region, all countries are advised to strengthen collaboration between the health sector and weather bureaux.

- SADC malaria managers should work with the SADC Regional Communicable Diseases Centre in Lusaka, Zambia, to establish a thematic group on malaria outbreaks and emergencies.

- Initiate a proactive approach to malaria surveillance, and strengthen the development and use of alert and epidemic thresholds for weekly reporting of malaria cases and deaths and surveillance of active foci.

- Define and establish minimum stockpiles of malaria commodities at SADC level.

- Use the data, information and predictions provided by meteorological institutions to strengthen public communication appropriate for specific risk groups and for health workers.
Race Against Malaria kicks off

MARY TARUWINGA

Race Against Malaria (Ram), a Sade initiative to create awareness and mobilise resources for the fight against malaria and strengthen the malaria control infrastructure within the region, kicks off at the Nyamapanda Border Post yesterday, amid revelations of a malaria crisis in Zimbabwe.

The campaign, involving eight countries, among them Mozambique, Malawi and Zambia started in Malawi on Monday and will cut across all border districts, with major events at hot spot districts.

Some of the activities at cross borders/river basins along the Ram 2 route will focus on strengthening the T3 (Test, Treat and Track) surveillance strategy.

Speaking at the launch of Zimbabwe leg of Ram at Nyamapanda Border Post in Mudzi District, the deputy minister of Health and Child Care, Paul Chimedza, told delegates that Africa should use the campaign not only to raise awareness but to also attract more funding for malaria.

He said it was time to eliminate malaria as it hindered economic growth.

“During this race, you will interact with communities and stakeholders that are affected by malaria one way or the other, and your interactions will certainly help to increase awareness on this serious condition which does not only kill our people, children, pregnant women but also hinders the economic growth of countries.

“Winning the battle against malaria has the potential to improve the quality of the lives of millions as households will be able to spend less on health, thereby channeling more resources towards development,” he said.

Zimbabwe has managed to halve malaria infections from millions over the last decade to 400 000 currently.

Meanwhile, the Ram delegation is still in Zimbabwe and will hold the second campaign in Bulawayo and Victoria Falls before proceeding to Angola. The campaign will end on the 25th of this month, which is World Malaria Day.

The Ram 1 campaign in 2003 and the 2008 Zambezi River of
4. Cross-border initiatives

4.1 Introduction

As many countries around the world move towards the goal of eliminating malaria, it becomes evident that malaria should be tackled at regional level, as national efforts are not sufficient to address the interconnected nature of malaria transmission and importation across borders.5

The SADC region is accelerating towards malaria elimination by 2030, and a number of regional initiatives have been established to this end. The most successful example of effective cross-border malaria control in the SADC region was the Lubombo Spatial Development Initiative, a trilateral collaboration between Mozambique, South Africa and Swaziland for socioeconomic development in an impoverished region.

Several cross-border malaria control initiatives have been established in the SADC region, with varying levels of success:

■ the Trans-Kunene Malaria Initiative between Angola and Namibia;
■ the Trans-Zambezi Malaria Initiative, comprising Angola, Botswana, Namibia, Zambia and Zimbabwe;
■ ZAM-ZIM (Zambia and Zimbabwe), a subset of the Trans-Zambezi Malaria Initiative;
■ Botswana, Mozambique, South Africa and Zimbabwe (formerly the Trans-Limpopo Malaria Initiative);
■ Malawi, Mozambique and Zambia; and
■ Mozambique, South Africa and Swaziland (MOSASWA, formerly the Lubombo Spatial Development Initiative).

These initiatives are currently limited by insufficient financial resources; however, SADC Member States, at their 2016 Annual Review Meeting, committed to intensifying their efforts to secure domestic and international funding to support cross-border malaria initiatives.

In 2009, SADC ministers of health committed themselves to regional collaboration for malaria elimination in the SADC, beginning with the four countries that are planning malaria elimination by 2020 and their four neighbouring countries, which together form the E8. Within the E8, there are three operational cross-border malaria initiatives, namely MOSASWA, the Trans-Kunene Malaria Initiative and ZAM-ZIM. These regional initiatives could advance elimination by greater collaboration, sharing of lessons to tackle common challenges and direct cooperation with neighbouring countries on specific border issues.

4.2 The path to elimination in the SADC


The current status of the cross-border initiatives in the countries moving towards malaria elimination is summarized below, with regional elimination goals, the frameworks to achieve them, the most promising enabling factors and potential barriers to achieving elimination between 2020 and 2030. Achievement of the goal of elimination of malaria by 2020 in the countries with low malaria transmission in southern Africa depends strongly on the sustainability of the fight and commitment.

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The E8 countries will strengthen their gradual, phased approach to rolling back the boundary of malaria transmission (Fig. 20). As the countries with low transmission eliminate malaria, the four second-line countries (Angola, Mozambique, Zambia and Zimbabwe) and Madagascar and, finally, the Democratic Republic of the Congo and the United Republic of Tanzania (mainland) will transit to elimination, with a view to eliminating malaria from all SADC countries by 2030.

4.2.1 E8 Strategic Plan (2015–2020)

The E8 Strategic Plan was adopted by the SADC ministers of health in 2009 and reaffirmed in 2011 and 2012. The aim of the Plan is “To accelerate zero local transmission in the four front-line countries by 2020 through the provision of a mechanism for collaboration and joint strategic programming”. The five strategic objectives are in line with those stated in the SADC Malaria Strategic Framework (2007–2015) and the SADC Malaria Elimination Framework. The E8 Member States submitted a concept note to the Global Fund to Fight HIV, Tuberculosis and Malaria in January 2015, which was approved for US$ 17.8 million for 3 years. Highlights of progress made in implementing the E8 Strategic Plan are shown below.

Regional coordination for achieving malaria elimination in each of the E8 member countries

In order for Member States to move jointly towards malaria elimination, they should deliberate on policies and the strategic and operational issues that affect their malaria elimination programmes in a collective effort to eliminate malaria. The E8 is a platform for convening the eight countries and their partners. A technical committee and technical working groups on case management, vector control, surveillance, monitoring and research have been established.

Fig. 20. Principle of the E8: move the elimination line upwards

The E8 concept and Strategy is founded on SADC principles of cooperation in health and communicable disease control.
The E8 Member States and partners reviewed the outbreaks experienced in 2016–2017 and agreed on an action plan to prevent future epidemics. The Initiative has also been used to share best practices, challenges and lessons learnt, including innovative cross-border strategies, diagnostic methods and tools, community case management, vector control, entomological surveillance and mass drug administration.

**Elevating the regional agenda for malaria elimination to the highest political level in the E8 countries**

To promote the malaria elimination agenda, the initiative established the E8 Ministerial Committee as a platform for inter-country negotiation and accountability. It appointed an “ambassador” to represent E8 in regional and global forums, to lobby for political support and to prioritize malaria elimination in the SADC. It also devised an annual “E8 score-card” (Fig. 21) for use in advocacy and accountability among E8 Member States and for joint monitoring of progress.

**Promotion of knowledge management, quality control and harmonization of policies**

Quality-assured diagnosis is a cornerstone of successful malaria elimination. E8 countries have worked with WHO to obtain the requisite skills for quality assurance in malaria diagnosis according to the standard. A regional programme for improving diagnosis includes capacity-building, specialized testing and a microscope slide bank. In addition, microscopists in the region have been trained and attained level 1 certification in the WHO programme for external assessment of the competence of malaria microscopists, which qualifies them to build capacity for diagnosis in their own countries.

**Reduction of cross-border malaria transmission**

The initiative has facilitated the establishment of border posts to extend access to diagnosis and treatment of malaria to mobile and migrant populations and underserved border communities. Thus, 20 posts have

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**Fig. 21. E8 malaria elimination score-card**

![E8 Malaria Elimination Score-card](http://alma2030.org/sites/default/files/elimination-sc/e8_2016_scorecard_placemat.pdf)

been established at E8 borders (Fig. 22), where more than 40,000 patients have been tested and treated, reducing the reservoir of infection and contributing to reducing cross-border transmission.

Fig. 22. E8 malaria health posts and surveillance units

Malaria plus: a refurbished storage container providing diagnosis and treatment of malaria, as well as a basic package of primary health care modelled after the primary health care facilities in the country where they are located.
Malaria basic: a tent/“gazebo-like” structure that can be moved around, providing only core diagnosis and treatment of malaria.
Leverage site: provision of testing and treatment commodities for malaria to existing infrastructure, extending the reach of the early diagnosis and treatment strategy.
Surveillance units are mobile clinics offering screening and treatment for malaria.


Resources to support the regional elimination plan

The E8 Strategic Plan 2015–2020 formed the basis for the Global Fund concept note, and the Chair of the E8 Ministerial Committee (Swaziland), on behalf of the E8 Member States, signed a US$18 million grant from the Global Fund for accelerating malaria elimination between 2016 and 2018. A further US$4 million were secured from the Bill & Melinda Gates Foundation for the Trans-Kunene Malaria Initiative, which will also be administered by the E8 Secretariat in 2017 and 2018. US$1.9 million were raised from the University of California in San Francisco (USA) to support the E8 in 2017 and 2018. A board has been established to ensure governance and oversight of the Secretariat and the Initiative.

4.2.2 Mozambique, South Africa and Swaziland (MOSASWA) Malaria Initiative

The partner countries in this initiative are aggressively pursuing the shared goal of eliminating malaria. The transmission dynamics of malaria in these countries is interdependent and closely linked by population movement and the ecology of malaria. The aim of MOSASWA is:

- to build solidarity and collaborative work in the public and private sectors to accelerate from control to pre-elimination in southern Mozambique and accelerate the transition from pre-elimination to elimination of malaria in Swaziland and South Africa, to achieve zero local transmission in Swaziland, South Africa and Maputo province by 2018 and achieve pre-elimination (test-positive rate < 5%) status in southern Mozambique by 2020.
The four objectives of the initiative are to:

■ establish and operationalize the Initiative to accelerate malaria elimination;
■ extend and sustain access to interventions for malaria elimination in the MOSASWA region;
■ strengthen capacity for malaria surveillance, operational research, monitoring and evaluation in the three countries; and
■ mobilize resources and advocate for increased, sustainable financing to achieve and sustain malaria elimination.

The targeted regions are Maputo, Gaza and Inhambane in Mozambique; the provinces of KwaZulu-Natal, Limpopo and Mpumalanga in South Africa; and the whole of Swaziland. The main achievements of this relatively new initiative are listed below.

■ On 27 July 2015, the ministers of health of all three countries agreed to the agenda of MOSASWA: “to work collaboratively to accelerate the transition from pre-elimination to elimination of malaria”.

■ The Global Fund approved the concept note for a private partnership, with a total of US$ 9.7 million, of which US$ 4 million were contributed by the private sector, for 3 years from 2017. MOSASWA was launched in Maputo on 17 May 2017.

■ The MOSASWA regional council was established in July 2015 and a regional coordinating mechanism in August 2017.

■ The Namaacha centre of excellence was officially opened in Mozambique in July 2017 to train all levels of staff for IRS in Maputo Province. To date, 1000 spraymen, supervisors and managers have been trained. A course in monitoring and evaluation is scheduled for February 2018.

■ IRS was begun in four districts in Maputo Province on 21 August 2017.

■ Recruitment and training in screening and treatment have been conducted in South Africa.
4.2.3 Trans-Zambezi and Trans-Kunene Malaria Cross-border Initiatives

The Trans-Zambezi Malaria Cross-border Initiative was established and approved by the SADC health ministers in April 2006. Its aim is to accelerate malaria control and elimination in the districts of Angola, Botswana, Namibia, Zambia and Zimbabwe that converge at the Zambezi River. A memorandum of understanding was signed in 2011. The region is an attractive destination for international tourists and was recently described as the largest trans-frontier park in southern Africa. It also has significant potential for agriculture, fishing, mining, power generation and game ranging. The Malaria Initiative is expected to promote economic activity in this important trans-frontier hub.

Also, the region has created a Trans-Kunene Cross-border Initiative between Namibia and Angola. The initiative is committed to collaboration for accelerating malaria elimination at the shared border. A grant of US$ 4 million from the Bill & Melinda Gates Foundation, signed by the E8 Secretariat on behalf of the Initiative, was awarded to find sources of infection in southern Angola and sinks in northern Namibia and western Zambia. The Initiative will generate evidence for the establishment of malaria-free areas in southern Angola, and Angola will introduce integrated community case management, IRS and community mobilization in the districts along the Angola-Namibia border. The investment includes an LLIN distribution campaign, led by the Government of Angola and supported by the President’s Malaria Initiative (USA). The Government of Angola is co-financing the activity at a level of US$ 300,000, and Namibia’s Government will continue to support IRS with domestic resources. It is anticipated that the funding of additional IRS will significantly reduce the high incidence of imported cases of malaria in Namibia.

In spite of these well-established efforts and others that have been completed, additional work is required, such as collaboration between Zambia and Zimbabwe. This will require functioning cross-border committees and resources.

Fig. 23. Malaria incidence rates in the area of the Trans-Zambezi and Trans-Kunene Malaria Cross-border Initiatives, 2015

Malaria plus: a refurbished storage container providing diagnosis and treatment of malaria, as well as a basic package of primary health care modelled after the primary health care facilities in the country where they are located.
Malaria basic: a tent/“gazebo-like” structure that can be moved around, providing only core diagnosis and treatment of malaria.
Leverage site: provision of testing and treatment commodities for malaria to existing infrastructure, extending the reach of the early diagnosis and treatment strategy.
Source: Elimination 8 Secretariat.
4.3 Challenges and lessons learnt

Cross-border initiatives have been a long standing approach for tackling malaria in the SADC region, as no one country can achieve malaria control and elimination without the concerted efforts of other countries. The challenges faced by current and planned initiatives should be used to learn from and to define operations. Some of the challenges faced in setting up such initiatives are listed below.

- It takes time before concrete discussions are held and agreements reached both within each government and among the governments concerned. If the process is rushed, some governments will be left behind and the initiative may be built without appropriate approval from all ministries. This can jeopardize the sustainability of the initiative.

- The objectives of some initiatives involve activities that are the purview of the national government. These should be considered carefully and measures put in place to ensure that national sovereignty is not infringed by the project.

- Countries should be at the centre of such initiatives, which should be directed from within the government. The initiatives should reflect the willingness of countries to collaborate, with or without external funding.

- The Lubombo Spatial Development Initiative gained international recognition, even outside the SADC. There are lessons to be learnt from this successful project to ensure that new initiatives do not go unfunded, thereby obviously coming to an end.

- Many cross-border initiatives have been set up since 2006. The benefit of some of these initiatives for the region and for the countries involved is unclear, as the countries received considerable funding from domestic and external resources at the same time. Cross-border initiatives should be evaluated so that the SADC can learn lessons and improve their establishment and functioning.

4.4 Recommendations

Additional solutions will be required to sustain momentum towards achieving the vision of a malaria-free SADC. On the basis of the analysis above, the following recommendations are made.

- Develop regional and multi-country funding mechanisms, mainly from governments and their partners (public or private). A regional public fund could contribute to accelerating progress to elimination throughout the region and help to reduce importation of malaria into malaria-free zones.

- Facilitate the appointment of a malaria focal person in the SADC to coordinate all malaria activities, including reviewing and updating the SADC Malaria Elimination Strategic Framework, which ended in 2015.

- SADC countries should review and adopt lessons from successful elimination efforts, both in the SADC region and in other regions of Africa and the Asia-Pacific and Americas regions.

- Collaborate with neighbouring countries in research, share the findings, and address the many operational challenges to regional elimination.

- Extend coverage of all prevention, diagnostic and treatment services to targeted populations in cross-border communities, including through cross-border referral systems.

- Improve cross-border sharing of information to ensure identification and classification of all foci of transmission in cross-border areas.

- Strengthen collaboration in pharmacovigilance of malaria medicines and entomological surveillance.

- Strengthen communication for behaviour change in cross-border areas with targeted and other messages and by empowering and engaging local communities to support the initiatives.

- Develop a monitoring and evaluation framework for cross-border collaborations within SADC to track progress and achievements.
The village of Palene Sede where 300–400 families are expected to receive nets (Mozambique)
Substantial progress has been made throughout the SADC region in the fight against malaria, with the support of ministers of health, heads of state, partners, donors, researchers and affected communities. History shows, however, that progress against malaria is fragile and gains can be lost if sufficient funding is not maintained, even once malaria transmission has been interrupted.

Investment in malaria elimination in the SADC region will continue to yield substantial returns, as malaria prevention and treatment are among the most cost-effective public health interventions. The WHO GTS estimated that US$ 101.8 billion are required to achieve the 2030 malaria goals; however, although the initial outlay is high, the return on each dollar invested is multiplied. As highlighted in the AIM 2015 report, for every US$ 1 per capita investment in the fight against malaria in Africa, per capita GDP increased by $6.75. This will bring greater productivity and growth, reduce household poverty, increase equity and women’s empowerment and strengthen health systems.

A review of national strategic plans shows that the total funding required in the SADC region for 2014–2016 was US$ 2.6 billion, of which only 78% was funded by domestic budget allocations and funding from the Global Fund and the President’s Malaria Initiative. While the gap decreased in 2016, the amount was still significant: US$ 37 million worth of critical malaria activities were unfunded. Given that donor funding is decreasing as SADC countries move from low-income and lower-middle-income status, they will have to change to primarily domestic financing for malaria activities. Methods to lower costs, increase effectiveness and improve value for money, such as targeting interventions by using data and surveillance, will also help close the funding gap.

This section describes funding for malaria in the SADC region and proposes a comprehensive resource mobilization strategy for both increasing domestic resources and finding innovations to increase efficiency and effectiveness.

### 5.1 Domestic and international financing in the SADC region

Some malaria-endemic SADC countries have recently assumed greater responsibility for investing in reducing malaria transmission. Domestic financing accounted for approximately US$ 89 million in 2014 and increased to US$ 118 million in 2015, to stabilize at US$ 116 million in 2016. The increase included a US$ 20 million increase in Angola in response to an outbreak of yellow fever and malaria, which led to additional resources for prevention of vector-borne diseases, and investment of an additional US$ 7 million by Zambia (Table 2).

Although international funding for malaria in the SADC region has increased substantially over the past two decades, an analysis of donor funding – particularly by the Global Fund – reveals only tepid growth in a few selected SADC countries and dramatic decreases for other countries in the region. As malaria becomes less “visible” than other diseases – with the invisible threat of resurgence – and as countries in the SADC region advance economically, reductions in external financing are expected to continue.

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Overall, between 2015 and 2017, the Global Fund was the largest donor for malaria programmes, contributing approximately US$ 1.22 billion to malaria-endemic countries in the SADC. While the Global Fund’s disbursements were significant, grant allocations for the 2018–2020 period are substantially less for eight SADC countries (Angola, Botswana, Democratic Republic of the Congo, Madagascar, Malawi, Namibia, Swaziland and United Republic of Tanzania). These countries received 23% less funding from the Global Fund for 2018–2020 than in the last round – a reduction of approximately US$ 277 million.

The countries that are closest to eliminating malaria saw some of the largest reductions in funding from the Global Fund, threatening their achievements. For example, Botswana received 75% less funding than in the previous round; Namibia’s allocation decreased by 67% and Swaziland’s by half. Furthermore, many of these countries have been notified that they will not be eligible for Global Fund funding in the next two rounds and that they must move away from donor funding.

The largest regional initiatives in the SADC, the E8 and MOSASWA, are also supported mainly by the Global Fund, which allocated US$ 2.2 million to the E8 for 2015–2016. Funding through the MOSASWA grant is US$ 9.8 million for 2017–2020, with US$ 4.8 million from the Global Fund and the remaining US$ 4 million pledged from the private sector.

The contributions reported by donors to the SADC region are shown in Table 4.

Bilateral funding from the United States Government has remained at around the same level since 2010. The United Kingdom Department for International Development increased funding by about 30% between 2014 and 2015 for three SADC countries, the Democratic Republic of the Congo, the United Republic of Tanzania (mainland) and Zambia.
Table 3. Global Fund allocations for malaria (US$), SADC Member States

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>60 155 494</td>
<td>26 898 141</td>
<td>-55%</td>
</tr>
<tr>
<td>Botswana</td>
<td>5 128 597</td>
<td>1 287 500</td>
<td>-75%</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>419 163 154</td>
<td>347 651 023</td>
<td>-17%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>84 611 304</td>
<td>52 000 000</td>
<td>-39%</td>
</tr>
<tr>
<td>Malawi</td>
<td>85 604 130</td>
<td>70 670 374</td>
<td>-17%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>140 759 505</td>
<td>167 870 339</td>
<td>19%</td>
</tr>
<tr>
<td>Namibia</td>
<td>5 487 140</td>
<td>1 823 454</td>
<td>-67%</td>
</tr>
<tr>
<td>Swaziland</td>
<td>5 162 413</td>
<td>2 581 055</td>
<td>-50%</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland</td>
<td>306 851 884</td>
<td>145 258 808</td>
<td>-53%</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>14 873 609</td>
<td>5 134 807</td>
<td>-65%</td>
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<tr>
<td>Zambia</td>
<td>53 342 237</td>
<td>69 000 000</td>
<td>29%</td>
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<tr>
<td>Zimbabwe</td>
<td>40 171 437</td>
<td>53 685 777</td>
<td>34%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1 221 310 904</strong></td>
<td><strong>943 861 278</strong></td>
<td><strong>-23%</strong></td>
</tr>
</tbody>
</table>


NA, not available

Table 4. Contributions to the SADC region reported by donors

<table>
<thead>
<tr>
<th>Country</th>
<th>President’s Malaria Initiative and United States Agency for International Development</th>
<th>World Bank</th>
<th>United Kingdom Department for International Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>29 034 800</td>
<td>28 000 000</td>
<td>NA</td>
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<tr>
<td>Democratic Republic of the Congo</td>
<td>50 060 000</td>
<td>50 000 000</td>
<td>(34 980)</td>
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<td>Madagascar</td>
<td>26 031 200</td>
<td>26 000 000</td>
<td>NA</td>
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<td>Malawi</td>
<td>22 026 400</td>
<td>22 000 000</td>
<td>NA</td>
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<tr>
<td>Mozambique</td>
<td>29 034 800</td>
<td>29 000 000</td>
<td>1 051 656</td>
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<tr>
<td>United Republic of Tanzania</td>
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<td></td>
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<tr>
<td>Mainland</td>
<td>42 514 868</td>
<td>41 813 742</td>
<td>NA</td>
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<td>Zanzibar</td>
<td>828 107</td>
<td>1 167 570</td>
<td>NA</td>
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<td>Zambia</td>
<td>24 028 800</td>
<td>24 000 000</td>
<td>(79 393)</td>
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<tr>
<td>Zimbabwe</td>
<td>15 018 000</td>
<td>15 000 000</td>
<td>NA</td>
</tr>
</tbody>
</table>


NA, not available

* Figures in brackets are negative disbursements due to recovery of funds.
5. Resource mobilization and financing

The 2015 financing for global health report published by the Institute for Health Metrics and Evaluation\(^1\) showed a plateau in development funding from major donors, in sharp contrast to the “golden age” of global health financing between 2000 and 2010, when funding grew by 11.4% on average each year. If global health financing remains tepid and malaria-specific funding decreases, further progress will be impeded.

5.2 Financial requirements and gaps identified in national strategic plans for malaria programmes

5.2.1 Budgets

The costs of malaria control and elimination programmes are reflected in each country’s national strategic plan (Table 5). According to the GTS, countries with more than 1 million cases require higher per capita spending (US$ 3.40) than those with 10 000 to 1 million cases (US$ 2.50). Countries with fewer than 10 000 cases require the highest per capita spending (US$ 3.75) due to the costs associated with case-based surveillance.\(^2\) For countries that are eliminating malaria and are moving away from donor funding, it is especially important to increase spending for case-based surveillance in order sustain the progress made during the past decade.

Table 5. National strategic plan budgets in the SADC region

<table>
<thead>
<tr>
<th>Country</th>
<th>2014 (US$)</th>
<th>2015 (US$)</th>
<th>2016 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>134 354 433</td>
<td>146 866 166</td>
<td>110 276 399</td>
</tr>
<tr>
<td>Botswana</td>
<td>5 631 150</td>
<td>7 679 710</td>
<td>7 163 446</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>170 119 444</td>
<td>235 804 392</td>
<td>215 740 726</td>
</tr>
<tr>
<td>Madagascar</td>
<td>64 090 000</td>
<td>58 726 815</td>
<td>49 555 960</td>
</tr>
<tr>
<td>Malawi</td>
<td>34 017 015</td>
<td>95 324 180</td>
<td>54 461 794</td>
</tr>
<tr>
<td>Mozambique</td>
<td>112 787 401</td>
<td>124 178 515</td>
<td>89 967 515</td>
</tr>
<tr>
<td>Namibia</td>
<td>16 678 974</td>
<td>8 002 040</td>
<td>10 321 700</td>
</tr>
<tr>
<td>South Africa</td>
<td>17 430 476</td>
<td>18 273 507</td>
<td>19 638 803</td>
</tr>
<tr>
<td>Swaziland(^a)</td>
<td>4 828 800</td>
<td>3 896 259</td>
<td>3 301 948</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland(^a)</td>
<td>112 985 292</td>
<td>132 923 873</td>
<td>133 749 185</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>5 419 364</td>
<td>9 285 985</td>
<td>6 187 306</td>
</tr>
<tr>
<td>Zambia</td>
<td>104 187 433</td>
<td>94 427 734</td>
<td>103 427 761</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>21 823 241</td>
<td>39 643 121</td>
<td>67 085 149</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>804 353 023</strong></td>
<td><strong>975 032 296</strong></td>
<td><strong>870 877 691</strong></td>
</tr>
</tbody>
</table>

\(^a\) The 2014 budget is an estimate, calculated by subtracting 15% from the 2015 budget.


5.2.2 Funding gaps

Despite increased financial support, there are still significant gaps in resources (Table 6). While there has been no comprehensive assessment of national gaps in funding, the shortfall between the requirements outlined in national strategic plans and budget allocations, both domestically and from major donors, was about US$ 582 million between 2014 and 2016, suggesting that numerous malaria activities were not funded. Further, these gaps may widen as donor funding decreases.

Sizeable financial gaps persist in countries that are eliminating malaria. The target of Botswana, South Africa and Swaziland to eliminate malaria by 2020 cannot be achieved if they cannot close these gaps. When the Global Fund removes its support to these countries, the discrepancy between funding requirements and available resources will only become more pronounced, especially if other domestic resources or innovative measures are not mobilized.

More malaria-endemic countries like Angola, Madagascar, Malawi and Zambia continue to lack the funding they need, which has halted progress and resulted in unnecessary infections and deaths. Gaps in programmes such as those of Angola not only contribute to higher national morbidity and mortality but also threaten progress in neighbouring countries such as Namibia, Swaziland and South Africa, due to cross-border importation of cases. It is important to recognize the interconnectivity in the SADC region, as lack of funding in one country can lead to a resurgence of cases in another, epidemiologically connected country.

Table 6. National strategic plan budgets in the SADC region

<table>
<thead>
<tr>
<th>Country</th>
<th>2014 (US$)</th>
<th>2015 (US$)</th>
<th>2016 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>77 717 373</td>
<td>70 190 031</td>
<td>21 435 045</td>
</tr>
<tr>
<td>Botswana</td>
<td>3 488 598</td>
<td>4 422 667</td>
<td>3 833 830</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>0</td>
<td>53 421 494</td>
<td>0</td>
</tr>
<tr>
<td>Madagascar</td>
<td>37 535 226</td>
<td>9 296 378</td>
<td>16 641 662</td>
</tr>
<tr>
<td>Malawi</td>
<td>1 012 824</td>
<td>39 967 403</td>
<td>27 768 490</td>
</tr>
<tr>
<td>Mozambique</td>
<td>43 830 966</td>
<td>70 591 552</td>
<td>(103 509 578)</td>
</tr>
<tr>
<td>Namibia</td>
<td>13 124 574</td>
<td>4 379 030</td>
<td>(103 583)</td>
</tr>
<tr>
<td>South Africa</td>
<td>243 755</td>
<td>633 579</td>
<td>4 135 336</td>
</tr>
<tr>
<td>Swaziland</td>
<td>4 124 165</td>
<td>2 878 571</td>
<td>470 285</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland</td>
<td>20 309 524</td>
<td>8 392 175</td>
<td>(17 663 508)</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>(380 818)</td>
<td>3 145 087</td>
<td>1 201 330</td>
</tr>
<tr>
<td>Zambian</td>
<td>55 214 721</td>
<td>25 923 126</td>
<td>50 727 761</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>(4 683 410)</td>
<td>(608 490)</td>
<td>32 690 458</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>251 537 498</td>
<td>292 632 602</td>
<td>37 627 529</td>
</tr>
</tbody>
</table>

Figures in brackets are surpluses
If domestic funding does not remain at current levels or increase, the SADC region will face the challenge of resurgent malaria. The series of outbreaks during the 2016–2017 malaria season could be a warning of future resurgence if malaria financing decreases overall. While most of the health commodities required for 2018–2020 will be financed, the countries that reported this type of funding indicated a heavy reliance on external funding, primarily from the Global Fund and the President’s Malaria Initiative, for these life-saving drugs, diagnostics and vector control commodities (Table 7). If external funding decreases and domestic funding does not increase, the situation will become alarming.

### Table 7. Predicted gaps in financing for health commodities in malaria control programmes in the SADC region in 2018–2020

<table>
<thead>
<tr>
<th>Country</th>
<th>Health commodity</th>
<th>Total no. required</th>
<th>Financed externally</th>
<th>Financed internally</th>
<th>Total gap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botswana</td>
<td>LLINs</td>
<td>181 638</td>
<td>104 645</td>
<td>76 993</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Insecticide</td>
<td>305 978</td>
<td>0</td>
<td>305 978</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>ACTs</td>
<td>421</td>
<td>0</td>
<td>421</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>RDTs</td>
<td>135 400</td>
<td>0</td>
<td>135 400</td>
<td>0</td>
</tr>
<tr>
<td>Malawi</td>
<td>LLINs</td>
<td>16 142 245</td>
<td>16 142 245</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Insecticide</td>
<td>61 599 519</td>
<td>0</td>
<td>0</td>
<td>61 599 519</td>
</tr>
<tr>
<td></td>
<td>ACTs</td>
<td>23 349 601</td>
<td>11 349 601</td>
<td>12 000 000</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>RDTs</td>
<td>33 394 362</td>
<td>33 394 362</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Swaziland</td>
<td>LLINs</td>
<td>573 413</td>
<td>1 011 504</td>
<td>0</td>
<td>- 438 091</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainland</td>
<td>LLINs</td>
<td>27 475 342</td>
<td>27 475 342</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zanzibar</td>
<td>LLINs</td>
<td>1 537 806</td>
<td>1 537 806</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Insecticide</td>
<td>116 794</td>
<td>0</td>
<td>0</td>
<td>116 794</td>
</tr>
<tr>
<td>Zambia</td>
<td>LLINs</td>
<td>27 621 500</td>
<td>27 475 342</td>
<td>0</td>
<td>146 158</td>
</tr>
<tr>
<td></td>
<td>ACTs</td>
<td>36 024 656</td>
<td>30 140 242</td>
<td>0</td>
<td>5 884 414</td>
</tr>
<tr>
<td></td>
<td>RDTs</td>
<td>29 432 338</td>
<td>10 327 790</td>
<td>0</td>
<td>19 104 548</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>LLINs</td>
<td>4 563 809</td>
<td>4 563 809</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Insecticide</td>
<td>2 221 502</td>
<td>0</td>
<td>849 572</td>
<td>1 371 930</td>
</tr>
<tr>
<td></td>
<td>ACTs</td>
<td>1 236 100</td>
<td>1 236 100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>RDTs</td>
<td>3 331 997</td>
<td>3 331 997</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

These analyses were conducted by the Roll Back Malaria Partnership with the national malaria control programme of each country. The figures should be updated annually as the funding situation evolves.
5.3 Resource mobilization

To accelerate malaria elimination and ultimately eradication towards 2030, the SADC countries must collectively mobilize additional resources. A comprehensive resource mobilization strategy would combine approaches to increase domestic sources and also to use innovations to increase efficiency and effectiveness. Countries in the region should therefore continue to: (i) improve financial management; (ii) invest in high-impact, cost-effective, evidence-based interventions and improve service delivery; (iii) leverage financing innovations; and (iv) increase domestic financing.

5.3.1 Financial management

Most malaria programmes do not spend the funds they have. This is often a consequence of bottlenecks in procurement or hiring, which are outside the control of the programme. Better planning and management, both within malaria programmes and in the areas of bottlenecks, could help to ensure that programmes are prepared and organized to carry out funded activities. An assessment of procurement and supply chain processes and a robust, detailed, costed national strategic plan could help in addressing bottlenecks.

In the interim, anecdotal feedback from programme managers indicates several aspects that prevent programmes from maximizing their financial resources. Two of these are the technical expertise of programme staff and the bureaucracy involved in public sector procurement and supply chain management. Potential solutions include further training of staff and strengthening auditing and planning in countries.

5.3.2 Investment in high-impact interventions and improved service delivery

Programmes with limited resources should continue to adopt and adapt the WHO-recommended interventions that are of known benefit when implemented according to standards. Using the evidence-based, high-impact interventions recommended by WHO and changing how operations are conducted could give more value for less money. In countries with high-to-moderate transmission, priority should be given to ensuring universal access to quality-assured vector control, chemoprevention and management of confirmed malaria cases, which can dramatically reduce morbidity and mortality. Countries approaching elimination should also continue to strengthen both passive and active case detection to prevent onward transmission.

Although targeted interventions and greater efficiency can reduce the discrepancy between the resources available and those required, they will not be sufficient to close the gap. Programmes can further optimize the available resources by involving other stakeholders and partners in the national malaria strategic plan, with coordination of activities to ensure that efforts are optimized and aligned. “Handover” plans should be prepared in advance when external support is to be withdrawn.

5.3.3 Financing innovations

Many countries in the world are considering financing options that leverage debt with financial assistance in order to move from a donor-dependent programme to one that is financed from domestic funds, with bonds or loans bridging the gap between dependence on donors and domestic self-subsistence.

The Roll Back Malaria Partnership and Dalberg, a global development consulting firm, are planning to issue “development impact bonds” to raise funds for malaria elimination in Mozambique. The funders commit themselves to pay a return to investors when programme targets have been reached. Of a goal of US$ 3.5 million, they have already secured a pledge of US$ 1.5 million from Nando’s, a South African restaurant chain. However, the first malaria bond has yet to be issued. Although these bonds present an opportunity to leverage financing from non-traditional investors, this complex financing model is still in its infancy and has not yet been proven.

Debt conversion schemes or debt swaps are another financing option. Through Debt2Health, beneficiary countries invest an agreed amount in health through the Global Fund, and creditors forego repayment of a portion of their sovereign debt. In September 2010, Germany signed an agreement to cancel about US$ 27 million of Côte d’Ivoire’s debt; in exchange, the Côte d’Ivoire invested half this amount in national programmes to combat HIV/AIDS through the Global
Fund. A total of about US$ 210 million was written off in the pilot phase of the Debt2Health initiative.

Another financial mechanism that could be used to generate revenue for health is an income levy, as used successfully in Zimbabwe. The National AIDS Trust Fund is financed by a 3% tax on individual income and a 3% tax on the profits of employers and trusts. At least 50% of the funds are used to procure antiretroviral medications and the remainder for administrative and capital costs, HIV prevention, monitoring and evaluation. In 2014 alone, the annual revenue reached US$ 38.6 million.

The private sector could be better leveraged. Companies that operate in malaria areas could be given incentives such as tax breaks or corporate social responsibility benefits to contribute to vector control and health promotion campaigns. Public–private partnerships could be established with companies that are affected by malaria to strengthen health promotion and ensure the effectiveness of vector control.

Ultimately, the choice of appropriate financing mechanisms for malaria elimination should be determined by their feasibility and by the fiscal capacity of the country to take on debt. A comprehensive resource mobilization strategy would incorporate such financing innovations and combine them with approaches to improve sustainability and increase domestic resources.

5.3.4 Improve sustainability and increase domestic financing

Since the 2005 Paris Declaration on Aid Effectiveness, reaffirmed by the 2008 Accra Agenda for Action, country ownership has been a cornerstone of international assistance. In the face of decreased contributions from donors, countries should increase domestic financing for malaria programmes, both by increased domestic contributions and by integrating vertical malaria systems into the broader health system to reduce costs. For example, in low-transmission settings, surveillance and case management could be integrated into district health or primary health programmes. Similarly, health promotion could be integrated into community health programmes.
5. Resource mobilization and financing

Namibia
6. Recommendations and conclusions

The following recommendations on the core strategies for malaria control and elimination emanate from the preceding sections.

6.1 General recommendations

- Facilitate the appointment of a malaria focal person at the SADC to coordinate all malaria activities, including a review and updating of the SADC Malaria Elimination Strategic Framework. Frameworks should cover all countries and all transmission profiles in the SADC.

- As best practice, all countries should review their progress annually and, on the basis of the review, conduct operational planning before the start of the malaria season, particularly for vector control interventions such as IRS.

- Delays in the procurement and delivery of malaria commodities have negative effects on malaria diagnosis and treatment and IRS operations. When the commodities are available centrally, countries must ensure that they are available for use at all delivery points, including the lowest level. The possibility of pooled procurement and warehousing of insecticides and other commodities should be explored at SADC level.

- Define and establish minimum stockpiles of malaria commodities at national level, and facilitate cross-border sharing of stocks at regional level when required.

- Countries should increase funding to national malaria programmes. This will create a backbone of funds on which other stakeholders can build, including by innovative funding mechanisms.

- The SADC should develop regional and multi-country funding mechanisms and encourage domestic financing, supported by partners. Country programmes should explore financing innovations such as bonds, debt conversion schemes and income levies and pursue collaboration with the private sector.

- In collaboration with WHO and other partners, strengthen collaboration between the health sector and weather bureaux to obtain annual malaria forecasts. Weather forecasts and malaria preparedness should be standing items on the agendas of annual national and regional planning meetings of stakeholders.

6.2 Specific recommendations

6.2.1 Communication to change social behaviour

- Core interventions must be accompanied by appropriate behaviour change activities, and uptake of these interventions encouraged. The activities should prioritize effective, evidence-based methods, including appropriate inter-personal communication and use of the mass media.

- All behaviour change activities should be monitored and evaluated to inform future interventions and better targeting through channels of communication that ensure the desired impact.

- Public communication campaigns (including to health workers) should be conducted before seasonal and/or major interventions, emphasizing personal preventive measures against mosquito bites, use of chemoprophylaxis and environmental management.

6.2.2 Malaria surveillance and epidemic preparedness and response

- All Member States must continue to strengthen their malaria surveillance systems in the public and the private sector so that they can passively and actively detect and report all cases. Where feasible, they should rigorously investigate, classify and respond to all cases. The systems should also ensure complete, timely reporting of high-quality data from all levels.

- Malaria programme staff at all levels should routinely analyse epidemiological indicators to inform planning and assess the impact of interventions as a basis for decisions.
The SADC Climate Services Centre has prepared a forecast for the region for 2017–2018. Countries are encouraged to use the forecast for epidemic preparedness and response. They are also encouraged to strengthen collaboration with their national meteorological offices for continuous monitoring of climate conditions to ensure an early response when needed. Weather forecasts and malaria preparedness should be standing items on the agendas of annual planning meetings of national and regional stakeholders.

Risk profiles should be established at district level, and alert and epidemic thresholds set for weekly numbers of malaria cases and deaths. Active foci should be included in malaria surveillance.

6.2.3 Vector control

Entomological surveillance, including monitoring the quality of IRS, determining the prevalence of insecticide resistance and investigating the biology of vectors, should be strengthened and made a priority in all Member States.

As both IRS and LLIN generate toxic wastes, all Member States are advised to ensure responsible implementation of these interventions, making every effort to limit human exposure to insecticides and prevent environmental contamination.

6.2.4 Case management

Countries must ensure that at-risk populations have access to high-quality malaria case management by regular training of health care workers and using community health programmes to manage cases.

Further effort should be made to ensure registration, procurement and use of primaquine and artesunate in all countries.

All countries with a policy of IPTp should continue to improve access to IPTp, making sure that the best approaches are used to reach all pregnant women.

Countries must conduct regular drug efficacy monitoring activities through clinical trials or molecular marking.

6.2.5 Collaboration between and among countries

All cross-border initiatives should be evaluated to ascertain their benefits and lessons to be learnt in order to strengthen the establishment and implementation of such initiatives.

Countries should conduct more operational research on malaria to determine national specificities. They should collaborate with neighbouring countries, share research findings at SADC level and collectively address the operational challenges to regional elimination identified by the studies.

Extend coverage of all interventions to targeted populations in cross-border communities (mobile and migrant populations and underserved communities), including through cross-border referral systems.

Cross-border districts are encouraged to share information on the epidemiology of malaria to allow identification and classification of all foci of transmission in cross-border areas.
6.3 Conclusions and way forward

The SADC region has taken significant strides to improve access to high-quality health services for malaria, to strengthen disease surveillance and to reduce malaria incidence and deaths. Despite these successes, the increase in malaria cases in 2016–2017 is a cause for concern. In this context, an epidemic preparedness and response team comprising WHO, the E8, the African Leaders Malaria Alliance, the Roll Back Malaria Partnership and national malaria programme managers has been assembled to support countries. The mandate of this team is to review case data weekly and provide the necessary technical support to countries.

Systems should be strengthened at national level and coordination and support structures at regional level. The SADC Secretariat, with the country that is chairing the regional bloc, should lead policy and strategy in the region, with WHO as the lead technical partner and with supporting partners such as the Roll Back Malaria Partnership and regional nongovernmental organizations.

In view of the epidemic situation and in order to take the recommendations in this report forward, the following are recommended.

- A costed annual plan of action should be developed to implement the recommendations, with defined roles and responsibilities for each Member State, the SADC Secretariat and stakeholders.
- Joint review and planning meetings should be organized annually by Members States and key regional partners, including WHO and the Roll Back Malaria Partnership. Participation in these meetings should be ensured by resources raised for this purpose.
- A framework of indicators adapted from the GTS should be developed and used as a template for regular reporting to ministers on country progress. Relevant score-cards should be developed for use with the framework.
- Annual SADC malaria reports should be drafted and presented to the Regional Committee meetings of the WHO African Region by the country minister chairing the SADC.
- When necessary, common SADC policy decisions relevant to malaria should be clearly expressed, including, when necessary, at SADC meetings of heads of state.
Annex 1. SADC country profiles

This annex contains the profiles of malaria in the countries in the SADC. **Fig. A1.1** shows malaria incidence in 2016 from both national and district data. The data were derived at different levels of functionality and are of varying quality. The figure shows the population at risk in each country (orange) and the total population (blue). The whole population of each SADC country is at risk for malaria, except in South Africa (18%), Swaziland (30%), Zimbabwe (52%), Botswana (57%) and Namibia (74%).

In an analysis of the proportions of malaria cases contributed by each SADC Member State in 2016, by far the largest contributor was the Democratic Republic of the Congo, which accounted for almost one third (32%) of all malaria cases, followed by Mozambique (16%); Malawi, the United Republic of Tanzania (mainland) and Zambia (13% each); Angola (9%) and Madagascar (4%). Botswana, Namibia, South Africa, Swaziland, the United Republic of Tanzania (Zanzibar) and Zimbabwe all contributed about 1% of all cases in the SADC.

**Fig. A1.2** shows the malaria incidence rates (per 1000 population) and the malaria mortality rates (per 100 000 population) in 2016 reported by Member States. Malaria incidence was highest in Zambia (381), followed by Malawi and Mozambique; the incidence was lowest in Botswana (0.3) and South Africa (0.6). Mortality from malaria was highest in Angola and the Democratic Republic of the Congo, followed by Malawi and Zambia; it was lowest in Botswana and South Africa.

As the data reported are not corrected for weaknesses in malaria surveillance, it would appear that, although Malawi and Zambia have higher incidence rates, they have lower mortality rates than Angola and Democratic Republic of the Congo. This anomaly may be due to health system issues, such as incomplete reporting of cases or limited access to services such as testing and treatment for some proportion of the population. For example, the community approach to health service delivery may not yet be in place or may not cover the entire population.

**Fig. A1.1. Populations at risk for malaria and total populations, SADC Member States, 2016**

Data source: Member State annual reports
Fig. A1.2. Malaria incidence and mortality rates in SADC Member States, 2016

Data source: Member State annual reports
Fig. A1.3 presents the geographical distribution of malaria in SADC Member States by stratum. Although the map was planned to show districts, we had to resort to higher administrative levels because of difficulty in matching the names and maps. Thus, the prevalence in most parts of the Democratic Republic of the Congo and Madagascar appears to be uniform.

The map shows malaria incidence in 2016 and can serve as a baseline for implementation of the GTS in the African Region, including the SADC. It shows that malaria is not evenly distributed within countries and that therefore blanket approaches may not be appropriate in most countries. The map also shows that there are fewer than 10 cases per 1000 population in most of Botswana, Namibia, South Africa and Swaziland and that these countries may therefore be able to eliminate malaria by 2020. From these expanses in the southern fringes of Africa, where the malaria incidence is < 1 case per 1000 population, the incidence increases northwards to 1–10 cases per 1000 population in northern Botswana, Namibia and most parts of Zimbabwe. Much progress has been achieved in the United Republic of Tanzania, in the centre of the country, from around Mount Kilimanjaro to the southern mountains of Iringa. Malaria incidence then increases rapidly, to reach rates > 50 cases per 1000 population, with some pockets of lower incidence, such as the southwestern portion of Angola and the area around Katanga in the Democratic Republic of the Congo. The highest incidence rates, > 200 per 1000 population, are found in Angola, Malawi, most parts of Mozambique, southeastern United Republic of Tanzania and Zambia.

The country profiles shown in the following pages are based on data provided by Member States, which also reviewed them. The data cover the period 2014–2017 (when data for 2017 were available) and include case counts, incidence per 1000 population, mortality counts and malaria mortality per 100 000 population. The profiles also include coverage with interventions such as LLINs, IRS, diagnosis and treatment as well as some data on financing and impact.
Fig. A1.3. Malaria incidence in the SADC region, 2016

Data source: Member State annual reports
A1.1 Countries and areas in the SADC region with high or moderate malaria transmission

pages 45–53

A1.2 Countries in the SADC region with low or very low transmission

pages 54–57
**Angola**

### Annual malaria cases (presumed and confirmed), 2005–2016

![Graph showing annual malaria cases (presumed and confirmed), 2005–2016](image)

### EPIDEMIOLOGY

#### Malaria incidence, January 2015–June 2017

![Graph showing malaria incidence, January 2015–June 2017](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Malaria Cases</th>
<th>Number of Malaria Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>3,254,270</td>
<td>7,832</td>
</tr>
<tr>
<td>2016</td>
<td>4,201,146</td>
<td>15,997</td>
</tr>
<tr>
<td>2017</td>
<td>2,223,844</td>
<td>6,978</td>
</tr>
</tbody>
</table>

#### Malaria mortality rate, 2015–2017

![Graph showing malaria mortality rate, 2015–2017](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Malaria Deaths (per 100,000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>7832</td>
</tr>
<tr>
<td>2016</td>
<td>15,997</td>
</tr>
<tr>
<td>2017 (Jan.–June)</td>
<td>6,978</td>
</tr>
</tbody>
</table>

### INTERVENTIONS

#### ITN/LLIN coverage and IRS coverage

![Graph showing ITN/LLIN coverage and IRS coverage](image)

#### Diagnosis and treatment

![Graph showing diagnosis and treatment](image)

#### ABER and positivity rate

![Graph showing ABER and positivity rate](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Reporting Completeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>76%</td>
</tr>
<tr>
<td>2014</td>
<td>83%</td>
</tr>
<tr>
<td>2015</td>
<td>81%</td>
</tr>
<tr>
<td>2016</td>
<td></td>
</tr>
<tr>
<td>2017 (Jan.–June)</td>
<td>80%</td>
</tr>
</tbody>
</table>

### FINANCING

#### Annual malaria budget, 2014–2016

![Graph showing annual malaria budget, 2014–2016](image)

### IMPACT

<table>
<thead>
<tr>
<th>Year</th>
<th>% of outpatient malaria cases</th>
<th>% of inpatient malaria cases</th>
<th>% of malaria deaths out of all deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>93%</td>
<td>7%</td>
<td>40%</td>
</tr>
<tr>
<td>2016</td>
<td>92%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>2017 (Jan.–June)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Democratic Republic of the Congo**

**Annual malaria cases (presumed and confirmed), 2005–2016**

![Graph showing annual malaria cases](image)

**Epidemiology**

**Malaria incidence, January 2015–June 2017**

![Graph showing malaria incidence](image)

- Total number of malaria cases: 12,186,639
- Number of malaria deaths: 39,054

**ITN/LLIN distribution and coverage**

![Graph showing ITN/LLIN coverage](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>IRS coverage</th>
<th>LLIN administrative coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>2014</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>2015</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>2016</td>
<td>20%</td>
<td>20%</td>
</tr>
</tbody>
</table>

**Diagnosis and treatment**

![Graph showing diagnosis and treatment](image)

**ABER and positivity rate**

![Graph showing ABER and positivity rate](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>ABER</th>
<th>Positivity rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>89%</td>
<td>100%</td>
</tr>
<tr>
<td>2014</td>
<td>81%</td>
<td>80%</td>
</tr>
<tr>
<td>2015</td>
<td>87%</td>
<td>60%</td>
</tr>
<tr>
<td>2016</td>
<td>95%</td>
<td>40%</td>
</tr>
<tr>
<td>2017 (Jan.–June)</td>
<td>78%</td>
<td>20%</td>
</tr>
</tbody>
</table>

**Evaluation**

**Impact**

<table>
<thead>
<tr>
<th>Interventions</th>
<th>2015</th>
<th>2016</th>
<th>2017 (Jan.–June)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of outpatient malaria cases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of inpatient malaria cases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of malaria deaths out of all deaths</td>
<td>41%</td>
<td>25%</td>
<td>26%</td>
</tr>
</tbody>
</table>

**Financing**

**Annual malaria budget, 2014–2016**

![Graph showing annual malaria budget](image)
Annual malaria cases (presumed and confirmed), 2005–2016

EPIEMIOLOGY

Malaria incidence, January 2015–June 2017

Malaria mortality rate, 2015–2017

INTERVENTIONS

ITN/LLIN coverage and IRS coverage

Diagnosis and treatment

ABER and positivity rate

FINANCING

Annual malaria budget, 2014–2016

IMPACT

Interventions 2015 2016 2017 (Jan.–June)

% of outpatient malaria cases 98% 98% 98%

% of inpatient malaria cases 2% 2% 2%

% of malaria deaths out of all deaths 8% 7% 9%
Annual malaria cases (presumed and confirmed), 2005–2016

EPIDEMIOLOGY

Malaria incidence, January 2015–June 2017

Malaria mortality rate, 2005–2016

INTERVENTIONS

ITN/LLIN distribution and coverage

Diagnosis and treatment

ABER and positivity rate

FINANCING

Annual malaria budget, 2014–2016

IMPACT

<table>
<thead>
<tr>
<th>Interventions</th>
<th>2015</th>
<th>2016</th>
<th>2017 (Jan.–June)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of outpatient malaria cases</td>
<td>37%</td>
<td>37%</td>
<td>41%</td>
</tr>
<tr>
<td>% of inpatient malaria cases</td>
<td>56%</td>
<td>46%</td>
<td>52%</td>
</tr>
<tr>
<td>% of malaria deaths out of all deaths</td>
<td>27%</td>
<td>26%</td>
<td>26%</td>
</tr>
</tbody>
</table>
**United Republic of Tanzania**

**Mainland**

### Annual malaria cases (presumed and confirmed), 2005–2016

![Annual malaria cases graph]

### EPIDEMIOLOGY

**Malaria incidence, January 2015–June 2017**

- 2015: 12,000,000
- 2016: 9,000,000
- 2017: 6,000,000
- 2018: 3,000,000

**Malaria mortality rate, 2005–2016**

- 2015: 15,000,000
- 2016: 6,000,000
- 2017: 3,000,000
- 2018: 1,500,000

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of malaria cases</th>
<th>Number of malaria deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>7,742,600</td>
<td>6,311</td>
</tr>
<tr>
<td>2016</td>
<td>6,050,094</td>
<td>5,045</td>
</tr>
<tr>
<td>2017</td>
<td>3,187,331</td>
<td>2,142</td>
</tr>
</tbody>
</table>

### INTERVENTIONS

**ITN/LLIN coverage and IRS coverage**

- **LLIN coverage:**
  - 2013: 100%
  - 2014: 80%
  - 2015: 60%
  - 2016: 40%
  - 2017: 20%

- **IRS coverage:**
  - 2013: 100%
  - 2014: 80%
  - 2015: 60%
  - 2016: 40%
  - 2017: 20%

**Confirmation rate**

- 2013: 0%
- 2014: 30%
- 2015: 60%
- 2016: 90%
- 2017: 100%

- **ABER and positivity rate**

<table>
<thead>
<tr>
<th>Year</th>
<th>ABER</th>
<th>Positivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>2014</td>
<td>91%</td>
<td>70%</td>
</tr>
<tr>
<td>2015</td>
<td>97%</td>
<td>50%</td>
</tr>
<tr>
<td>2016</td>
<td>97%</td>
<td>50%</td>
</tr>
<tr>
<td>2017</td>
<td>57%</td>
<td>50%</td>
</tr>
</tbody>
</table>

### FINANCING

**Annual malaria budget, 2014–2016**

- 2014: US$40 million
- 2015: US$60 million
- 2016: US$80 million
- 2017: US$100 million

### IMPACT

**Interventions 2015–2017 (Jan.–June)**

<table>
<thead>
<tr>
<th>Year</th>
<th>% of outpatient malaria cases</th>
<th>% of inpatient malaria cases</th>
<th>% of malaria deaths out of all deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>26%</td>
<td>29%</td>
<td>17%</td>
</tr>
<tr>
<td>2016</td>
<td>19%</td>
<td>23%</td>
<td>14%</td>
</tr>
<tr>
<td>2017</td>
<td>18%</td>
<td>22%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Annual malaria cases (presumed and confirmed), 2005–2016

**EPIDEMIOLOGY**

**Malaria incidence, January 2015–June 2017**

**Malaria mortality rate, 2005–2016**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>4780</td>
<td>4342</td>
<td>2730</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deaths</td>
<td>8</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**INTERVENTIONS**

**ITN/LLIN coverage and IRS coverage**

**Diagnosis and treatment**

**ABER and positivity rate**

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017 (Jan.–June)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% reporting completeness</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>106%</td>
<td></td>
</tr>
<tr>
<td>IRS coverage</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>LLIN administrative coverage</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

**FINANCING**

**Annual malaria budget, 2014–2016**

**IMPACT**

**Interventions**

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017 (Jan.–June)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of outpatient malaria cases</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>% of inpatient malaria cases</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>% of malaria deaths out of all deaths</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
**EPIDEMIOLOGY**

**Malaria incidence, January 2015–June 2017**

**Malaria mortality rate, 2005–2016**

**INTERVENTIONS**

**ITN/LLIN coverage and IRS coverage**

**Diagnosis and treatment**

**ABER and positivity rate**

% reporting completeness 74% 79% 81% 87%

**FINANCING**

**IMPACT**

% of outpatient malaria cases 98% 98% 99%

% of inpatient malaria cases 2% 2% 1%

% of malaria deaths out of all deaths 10% 10% 24%
### EPIDEMIOLOGY

#### Malaria incidence, January 2015–June 2017

- **Number of confirmed malaria cases (per 1000):**
  - 2015: 10
  - 2016: 0

- **Number of malaria deaths (per 100 000 population):**
  - 2015: 8
  - 2016: 4
  - 2017: 2

#### Malaria mortality rate, 2005–2016

- **Total number of malaria cases:**
  - 2015: 547,537
  - 2016: 174,272
  - 2017: 379,967

- **Number of malaria deaths:**
  - 2015: 462
  - 2016: 235
  - 2017: 406

### INTERVENTIONS

#### ITN/LLIN coverage and IRS coverage

- **LLIN administrative coverage:**
  - 2013: 60%
  - 2014: 80%
  - 2015: 100%

- **IRS coverage:**
  - 2013: 20%
  - 2014: 40%
  - 2015: 80%

- **Confirmation rate:**
  - % positive cases that received an ACT:
    - 2013: 20%
    - 2014: 40%
    - 2015: 60%

### FINANCING

#### Annual malaria budget, 2014–2016

- **Budget available - internal:**
  - 2015: $30 million
  - 2016: $45 million
  - 2017: $60 million

- **Budget available – external:**
  - 2015: $15 million
  - 2016: $30 million
  - 2017: $45 million

- **Funding gap:**
  - 2015: $15 million
  - 2016: $30 million
  - 2017: $45 million

### IMPACT

#### Interventions 2015–2016

- **% of outpatient malaria cases:**
  - 2015: 75%
  - 2016: 80%
  - 2017: 85%

- **% of inpatient malaria cases:**
  - 2015: 30%
  - 2016: 35%
  - 2017: 40%

- **% of malaria deaths out of all deaths:**
  - 2015: 60%
  - 2016: 80%
  - 2017: 40%
Adopted? Implemented?
Malaria is a notifiable disease  Yes Yes
Quality assurance oversight by national reference laboratory  Yes Yes
Treatment of cases with primaquine  Yes Yes
Treatment of severe cases with IV artesunate  Yes Yes
Mass drug administration  No No
Active case detection for case investigation (reactive)  Yes Yes
Active case detection of febrile cases (pro-active)  Yes Yes
Case and foci investigation and case classification is conducted  Yes Yes
Case reporting from the private sector is mandatory  Yes Yes
National elimination committee is in place  Appointed No
**Namibia**

### Annual malaria cases (presumed and confirmed), 2005–2016

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>200</td>
<td>140</td>
<td>120</td>
<td>110</td>
<td>90</td>
<td>120</td>
<td>110</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>50</td>
</tr>
</tbody>
</table>

### EPIDEMIOLOGY

**Caseloads, classification and malaria deaths, January 2015–June 2017**

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017 (Jan.–June)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local cases (%)</td>
<td>8772 (73%)</td>
<td>19 510 (78%)</td>
<td>N.A.</td>
</tr>
<tr>
<td>Imported cases (%)</td>
<td>2703 (22%)</td>
<td>3980 (16%)</td>
<td>N.A.</td>
</tr>
<tr>
<td>Unclassified cases (%)</td>
<td>570 (5%)</td>
<td>1379 (6%)</td>
<td>N.A.</td>
</tr>
<tr>
<td>Total number of cases</td>
<td>12 045</td>
<td>24 869</td>
<td>42 637</td>
</tr>
<tr>
<td>Malaria deaths</td>
<td>32</td>
<td>58</td>
<td>N.A.</td>
</tr>
<tr>
<td>Incidence (per 1000 population)</td>
<td>4.95</td>
<td>9.99</td>
<td>17.12</td>
</tr>
</tbody>
</table>

### INTERVENTIONS

**IRS coverage**

- **2015**: 60%
- **2016**: 80%
- **2017**: 100%

**ABER and positivity rate**

- **2015**: 30%
- **2016**: 30%
- **2017**: 40%

### FINANCING

**Annual malaria budget, 2014–2016**

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD (million)</td>
<td>8.0</td>
<td>10.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

### Diagnosis and treatment

- **% positive cases that received an ACT**
  - **2015**: 80%
  - **2016**: 60%
  - **2017 (Jan.–June)**: 20%

### Surveillance

- **Investigated**: 100%
- **Not investigated**: 0%

### INTERVENTIONS

- **Adopted? Implemented?**
- **Malaria is a notifiable disease**: Yes  Yes
- **Quality assurance oversight by national reference laboratory**: Yes  No
- **Treatment of cases with primaquine**: Yes  Yes
- **Treatment of severe cases with IV artesunate**: Yes  Yes
- **Mass drug administration**: No  No
- **Active case detection for case investigation (reactive)**: Yes  Yes
- **Active case detection of febrile cases (pro-active)**: No  No
- **Case and foci investigation and case classification is conducted**: Yes  Yes
- **Case reporting from the private sector is mandatory**: Yes  Partly
- **National elimination committee is in place**: Yes  No
South Africa

Annual malaria cases (presumed and confirmed), 2005–2016

EPIDEMIOLOGY

Caseloads, classification and malaria deaths, January 2015–June 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Local cases (%)</th>
<th>Imported cases (%)</th>
<th>Unclassified cases (%)</th>
<th>Total number of cases</th>
<th>Malaria deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>5169 (54%)</td>
<td>3929 (41%)</td>
<td>426 (4%)</td>
<td>11 276</td>
<td>141</td>
</tr>
<tr>
<td>2016</td>
<td>1121 (25%)</td>
<td>2970 (66%)</td>
<td>426 (9%)</td>
<td>5 775</td>
<td>42</td>
</tr>
<tr>
<td>2017</td>
<td>7056 (68%)</td>
<td>3251 (31%)</td>
<td>143 (1%)</td>
<td>11 951</td>
<td>391</td>
</tr>
</tbody>
</table>

Number of local cases (%) 5169 (54%) 1121 (25%) 7056 (68%)
Number of imported cases (%) 3929 (41%) 2970 (66%) 3251 (31%)
Number of unclassified cases (%) 426 (4%) 426 (9%) 143 (1%)
Total number of cases 11 276 5 775 11 951
Number of malaria deaths 141 42 391
Malaria incidence (per 1000 population) 1.17 0.60 1.24

INTERVENTIONS

IRS coverage

ABER and positivity rate

FINANCING

Annual malaria budget, 2014–2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Budget available - internal</th>
<th>Budget available - external</th>
<th>Funding gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>15 000</td>
<td>10 000</td>
<td>5 000</td>
</tr>
<tr>
<td>2015</td>
<td>20 000</td>
<td>15 000</td>
<td>5 000</td>
</tr>
<tr>
<td>2016</td>
<td>25 000</td>
<td>20 000</td>
<td>5 000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Adopted?</th>
<th>Implemented?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaria is a notifiable disease</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Quality assurance oversight by national reference laboratory</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Treatment of cases with primaquine</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Treatment of severe cases with IV artesunate</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mass drug administration</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Active case detection for case investigation (reactive)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Active case detection of febrile cases (pro-active)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Case and foci investigation and case classification is conducted</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Case reporting from the private sector is mandatory</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>National elimination committee is in place</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**Swaziland**

**Annual malaria cases (presumed and confirmed), 2005–2016**

- **2005**: 8000 cases
- **2006**: 6000 cases
- **2007**: 4000 cases
- **2008**: 2000 cases
- **2009**: 1000 cases
- **2010**: 0 cases
- **2011**: 500 cases
- **2012**: 300 cases
- **2013**: 100 cases
- **2014**: 0 cases
- **2015**: 400 cases
- **2016**: 100 cases

**Epidemiology**

**Caseloads, classification and malaria deaths, January 2015–June 2017**

- **Number of local cases (%)**
  - 2015: 157 (33%)
  - 2016: 67 (21%)
  - 2017 (Jan.–June): 121 (28%)

- **Number of imported cases (%)**
  - 2015: 284 (60%)
  - 2016: 226 (71%)
  - 2017 (Jan.–June): 291 (66%)

- **Number of unclassified cases (%)**
  - 2015: 37 (7%)
  - 2016: 28 (8%)
  - 2017 (Jan.–June): 25 (6%)

- **Total number of cases**
  - 2015: 475
  - 2016: 317
  - 2017 (Jan.–June): 437

- **Number of malaria deaths**
  - 2015: 7
  - 2016: 23
  - 2017 (Jan.–June): 4

- **Malaria incidence (per 1000 population)**
  - 2015: 1.23
  - 2016: 0.82
  - 2017 (Jan.–June): 3.16

**Interventions**

- **ITN/LLIN coverage and IRS coverage**

- **ABER and positivity rate**

- **Financing**

**Annual malaria budget, 2014–2016**

- **US$ (million)**
  - 2014: 2
  - 2015: 4
  - 2016: 5

**Adopted? Implemented?**

- **Malaria is a notifiable disease**: Yes Yes
- **Quality assurance oversight by national reference laboratory**: Yes Yes
- **Treatment of cases with primaquine**: Yes Yes
- **Treatment of severe cases with IV artesunate**: Yes Yes
- **Mass drug administration**: No No
- **Active case detection for case investigation (reactive)**: Yes Yes
- **Active case detection of febrile cases (pro-active)**: Yes Yes
- **Case and foci investigation and case classification is conducted**: Yes Yes
- **Case reporting from the private sector is mandatory**: Yes Yes
- **National elimination committee is in place**: Yes Yes

**Surveillance**

**Investigation rate**

- **2013**: 0
- **2014**: 200
- **2015**: 800
- **2016**: 1000

**Investigated**

- **2013**: 0
- **2014**: 100
- **2015**: 500
- **2016**: 800

**Not investigated**

- **2013**: 100
- **2014**: 400
- **2015**: 300
- **2016**: 200
Annex 2. Glossary and progress indicators

This glossary comprises all key terms relevant for the SADC malaria report 2017; the definitions are extracted from the WHO malaria terminology updated on a regular basis and available at http://apps.who.int/iris/bitstream/10665/208815/1/WHO_HTM_GMP_2016.6_eng.pdf.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>case detection, active</td>
<td>Detection by health workers of malaria cases at community and household levels, sometimes in population groups that are considered at high risk. Active case detection can consist of screening for fever followed by parasitological examination of all febrile patients or as parasitological examination of the target population without prior screening for fever.</td>
</tr>
<tr>
<td>case detection, passive</td>
<td>Detection of malaria cases among patients who, on their own initiative, visit health services for diagnosis and treatment, usually for a febrile illness</td>
</tr>
<tr>
<td>case, confirmed</td>
<td>Malaria case (or infection) in which the parasite has been detected in a diagnostic test, i.e. microscopy, a rapid diagnostic test or a molecular diagnostic test</td>
</tr>
<tr>
<td>case, fever</td>
<td>The occurrence of fever (current or recent) in a person</td>
</tr>
<tr>
<td>case, malaria</td>
<td>Occurrence of malaria infection in a person in whom the presence of malaria parasites in the blood has been confirmed by a diagnostic test</td>
</tr>
<tr>
<td></td>
<td><em>Note: A malaria case can be classified as imported, indigenous, induced, introduced, relapsing or recrudescent (depending on the origin of infection); and as symptomatic or asymptomatic. In malaria control settings, a “case” is the occurrence of confirmed malaria infection with illness or disease. In settings where malaria is actively being eliminated or has been eliminated, a “case” is the occurrence of any confirmed malaria infection with or without symptoms.</em></td>
</tr>
<tr>
<td>case, presumed</td>
<td>Case suspected of being malaria that is not confirmed by a diagnostic test</td>
</tr>
<tr>
<td>case, suspected malaria</td>
<td>Illness suspected by a health worker to be due to malaria, generally on the basis of the presence of fever with or without other symptoms</td>
</tr>
<tr>
<td>epidemic</td>
<td>Occurrence of a number of malaria cases highly in excess of that expected in a given place and time</td>
</tr>
<tr>
<td></td>
<td><em>Note: Seasonal increases in the incidence of malaria should not be confused with epidemics.</em></td>
</tr>
<tr>
<td>incidence, malaria</td>
<td>Number of newly diagnosed malaria cases during a defined period in a specified population</td>
</tr>
<tr>
<td>indoor residual spraying</td>
<td>Operational procedure and strategy for malaria vector control involving spraying interior surfaces of dwellings with a residual insecticide to kill or repel endophilic mosquitoes</td>
</tr>
<tr>
<td>intermittent preventive treatment in pregnancy</td>
<td>A full therapeutic course of antimalarial medicine given to pregnant women at routine prenatal visits, regardless of whether the woman is infected with malaria</td>
</tr>
<tr>
<td>long-lasting insecticidal net</td>
<td>A factory-treated mosquito net made of material into which insecticide is incorporated or bound around the fibres. The net must retain its effective biological activity for at least 20 WHO standard washes under laboratory conditions and 3 years of recommended use under field conditions</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<td>----------------------</td>
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</tr>
<tr>
<td>malaria control</td>
<td>Reduction of disease incidence, prevalence, morbidity or mortality to a locally acceptable level as a result of deliberate efforts. Continued interventions are required to sustain control.</td>
</tr>
</tbody>
</table>
| malaria elimination  | Interruption of local transmission (reduction to zero incidence of indigenous cases) of a specified malaria parasite in a defined geographical area as a result of deliberate activities. Continued measures to prevent re-establishment of transmission are required.  
*Note: The certification of malaria elimination in a country will require that local transmission is interrupted for all human malaria parasites.* |
| malaria eradication  | Permanent reduction to zero of the worldwide incidence of infection caused by human malaria parasites as a result of deliberate activities. Interventions are no longer required once eradication has been achieved. |
| malaria-free         | Describes an area in which there is no continuing local mosquito-borne malaria transmission and the risk for acquiring malaria is limited to infection from introduced cases. |
| population at risk   | Population living in a geographical area where locally acquired malaria cases have occurred in the past 3 years.                           |
| rapid diagnostic test positivity rate | Proportion of positive results among all rapid diagnostic tests performed.                                                                |
| slide positivity rate | Proportion of blood smears found to be positive for Plasmodium among all blood smears examined                                            |
| surveillance         | Continuous, systematic collection, analysis and interpretation of disease-specific data and use in planning, implementing and evaluating public health practice |
| test positivity rate* | Proportion of positive results among all parasitological tests performed (by rapid diagnostic tests and microscopy)                        |

*This term is not defined in the WHO malaria terminology but interpreted as such here based on the definitions of rapid diagnostic test positivity rate and slide positivity rate.*
Progress indicators used in this report, especially in Chapter 2, are reported in the following table with the corresponding definitions, numerators and denominators.

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Numerator</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Proportion of population at risk sleeping under an ITN or living in a house sprayed by IRS in the previous 12 months</td>
<td>Number of people at risk sleeping under an ITN or living in a house sprayed by IRS in the previous 12 months</td>
<td>Population at risk of malaria</td>
</tr>
<tr>
<td>2  Proportion of population that slept under an ITN the previous night</td>
<td>Number of individuals who slept under an ITN the previous night</td>
<td>Total number of individuals who spent the previous night in surveyed households</td>
</tr>
<tr>
<td>3  Proportion of population at risk protected by IRS in the previous 12 months</td>
<td>Number of people protected by IRS in the previous 12 months</td>
<td>Population at risk of malaria</td>
</tr>
<tr>
<td>4  IRS operational coverage or proportion of targeted units/structures sprayed by IRS in the previous 12 months</td>
<td>Number of units/structures sprayed by IRS in the previous 12 months</td>
<td>Number of targeted units/structures for spraying by IRS in the previous 12 months</td>
</tr>
<tr>
<td>5  Proportion of pregnant women who received ≥ 3 doses of IPTp</td>
<td>Number of pregnant women who received ≥ 3 doses of IPTp</td>
<td>Number of pregnant women attending a first antenatal care visit</td>
</tr>
<tr>
<td>6  Proportion of patients with suspected malaria who received a parasitological test</td>
<td>Number of suspected malaria cases receiving a parasitological test</td>
<td>Number of suspected cases of malaria</td>
</tr>
<tr>
<td>7  Proportion of all malaria treatments with ACTs (or other appropriate treatment according to national policy) among febrile children aged under 5 years</td>
<td>Number of children aged under 5 years with fever in the previous two weeks who received an ACT (or another appropriate treatment according to national policy)</td>
<td>Total number of children aged under 5 years with fever in the previous two weeks who received any antimalarial medicine</td>
</tr>
<tr>
<td>8  Proportion of expected health facility reports received</td>
<td>Number of reports received from health facilities</td>
<td>Total number of reports expected from health facilities (number of health facilities multiplied by the number of reports expected per health facility over period)</td>
</tr>
<tr>
<td>9  Annual blood examination rate</td>
<td>Number of patients receiving a parasitological test over a year</td>
<td>Mid-year number of persons at risk for malaria</td>
</tr>
<tr>
<td>10 Proportion of cases investigated and classified</td>
<td>Total number of malaria cases in the national case register with fully completed case investigation forms</td>
<td>Total number of malaria cases in the national case registry</td>
</tr>
<tr>
<td>11 Parasite prevalence</td>
<td>Number of persons with malaria infection detected by RDT or microscopy</td>
<td>Total number of persons tested for malaria parasites by RDT or microscopy</td>
</tr>
<tr>
<td>12 Malaria case incidence: number and rate per 1000 persons per year</td>
<td>Number of confirmed malaria cases identified through active and passive surveillance activities over a 1-year period x 1000</td>
<td>Mid-year number of persons at risk for malaria infection during reporting year</td>
</tr>
<tr>
<td>13 Malaria test positivity rate</td>
<td>Number of confirmed malaria cases</td>
<td>Number of patients receiving a parasitological test</td>
</tr>
<tr>
<td>14 Malaria mortality: number and rate per 100 000 persons per year</td>
<td>Number of malaria-specific deaths reported in the previous year x 100 000</td>
<td>Mid-year number of persons at risk for malaria infection during the reporting year</td>
</tr>
</tbody>
</table>

ACT, artemisinin-based combination therapy; IPTp, intermittent preventive treatment in pregnancy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net; LLIN, long-lasting insecticidal net; RDT, rapid diagnostic test

1 An ITN (insecticide-treated mosquito net) is either a factory-treated net that does not require any treatment (a long-lasting insecticidal net – LLIN), or a net that has been soaked with insecticide within the previous 12 months.
Annex 3. Global and regional goals and targets for malaria control

Global goals and targets
Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a set of 17 goals designed to transform our world. Goal 3 is to “Ensure healthy lives and promote wellbeing for all at all ages”. Target 3.3 of the SDGs – to end the epidemics of AIDS, tuberculosis and malaria and neglected tropical diseases and combat hepatitis, waterborne diseases and other communicable diseases by 2030 – is interpreted as including the targets of the WHO Global Technical Strategy for malaria 2016-2030 (GTS) and Action and Investment to defeat Malaria 2016–2030 (AIM). The goals, milestones and targets of the GTS, to attain a world free of malaria, are:

<table>
<thead>
<tr>
<th>Goal</th>
<th>Milestone</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce malaria mortality rates globally as compared with 2015</td>
<td>At least 40%</td>
<td>At least 75%</td>
</tr>
<tr>
<td>Reduce malaria case incidence globally as compared with 2015</td>
<td>At least 40%</td>
<td>At least 75%</td>
</tr>
<tr>
<td>Eliminate malaria from countries in which it was transmitted in 2015</td>
<td>At least 10 countries</td>
<td>At least 20 countries</td>
</tr>
<tr>
<td>Prevent re-establishment of malaria in all countries that are malaria-free</td>
<td>Re-establishment prevented</td>
<td>Re-establishment prevented</td>
</tr>
</tbody>
</table>
Regional goals and targets

Objectives, milestones and targets of the framework in the African Region

<table>
<thead>
<tr>
<th>Goal</th>
<th>Milestone</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2025</td>
</tr>
<tr>
<td>Reduce malaria mortality rates as compared with 2015</td>
<td>At least 40%</td>
<td>At least 75%</td>
</tr>
<tr>
<td>Reduce malaria case incidence as compared with 2015</td>
<td>At least 40%</td>
<td>At least 75%</td>
</tr>
<tr>
<td>Eliminate malaria from countries in which it was transmitted in 2015</td>
<td>At least 8 countries</td>
<td>At least 13 countries</td>
</tr>
<tr>
<td>Prevent re-establishment of malaria in all countries in Africa that are malaria-free</td>
<td>Re-establishment prevented</td>
<td>Re-establishment prevented</td>
</tr>
</tbody>
</table>

SADC Malaria Framework 2007–2015

Objectives

1. To implement harmonized policies, guidelines and protocols for the provision of malaria control services in all SADC Member States.
2. To mobilize funding for malaria programmes and make it accessible to countries for specific priorities
3. To establish a solid partnership and collaboration mechanism for malaria control among Member States and other stakeholders (private sector, nongovernmental organizations, donors)
4. To energize and support Member States to eliminate malaria within their national boundaries.

Targets

1. Halve malaria morbidity and mortality to 50% of the levels in 2000 by 2010 and to 75% of the levels in 2000 by 2015.
2. At least six countries in SADC will have eliminated malaria by 2015.
3. Improve health systems such that more than 90% of people have access to effective treatment and prevention services for malaria by 2010.
4. Establish and maintain a regional malaria information system.
5. Improve health systems such that more than 80% of people have access to effective treatment and prevention services for malaria.
6. Ensure at least six functioning cross-border malaria control initiatives.
7. At least 12 countries implementing IRS attain at least 80% coverage of the population at risk for malaria.
8. Achieve universal access to insecticide-treated materials and IRS for all populations at risk for malaria.
## Elimination 8 goals and targets

### Goal
To accelerate towards zero local transmission in the four front-line countries by 2020 by the provision of mechanisms for collaboration and joint strategic programming.

### Objectives
1. Strengthen regional coordination to achieve elimination in each of the E8 member countries.
2. Elevate and maintain the regional elimination agenda at the highest political level in the E8 countries.
3. Promote knowledge management, quality control and policy harmonization to accelerate progress towards elimination.
4. Facilitate a reduction in cross-border malaria transmission.
5. Secure resources to support the regional elimination plan, and ensure long-term, sustainable financing.

### Targets

<table>
<thead>
<tr>
<th>Goal</th>
<th>Baseline (2014)</th>
<th>Target 2015</th>
<th>Target 2016</th>
<th>Target 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Confirmed malaria cases (microscopy or RDT) per 1000 people per year in the border districts of the four front-line countries</td>
<td>1.85</td>
<td>1.33</td>
<td>0.7696</td>
<td>0.5626</td>
</tr>
<tr>
<td>2. Confirmed malaria cases (microscopy or RDT) per 1000 people per year in the border districts of the four second-line countries</td>
<td>125.06</td>
<td>80.54</td>
<td>71.28</td>
<td>61.8397</td>
</tr>
<tr>
<td>3. Inpatient malaria deaths per 1000 people per year in the border districts of the four front-line countries</td>
<td>0.014</td>
<td>0.0073</td>
<td>0.00365</td>
<td>0.00130</td>
</tr>
<tr>
<td>4. Inpatient malaria deaths per 1000 people per year in the border districts of the four second-line countries</td>
<td>0.080</td>
<td>0.06</td>
<td>0.046</td>
<td>0.03217</td>
</tr>
</tbody>
</table>

Annex 4. National and international partners in the SADC region

Various stakeholders have joined the SADC and its countries in their commitment to control and eliminate malaria, in implementing the activities and in achieving the results described in this report. These stakeholders include the following at regional and country level:

### Regional level
- African Leaders Malaria Alliance
- Clinton Health Access Initiative
- Elimination Eight (E8)
- Global Health Group, University of San Francisco (USA)
- International Committee of the Red Cross
- International Federation of Red Cross and Red Crescent Societies
- International Organization for Migration
- Novartis Pharma Services
- President’s Malaria Initiative
- Roll Back Malaria to End Malaria
- SADC Military Health Services
- Standard Diagnostics, Inc.
- The Global Fund to Fight AIDS, Tuberculosis and Malaria
- United Nations Children’s Fund
- Vestergaard
- WHO

United Republic of Tanzania, Zanzibar
### Country level

<table>
<thead>
<tr>
<th>Angola</th>
<th>Malawi</th>
<th>United Republic of Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglican Church</td>
<td>Clinton Health Access Initiative</td>
<td>Clinton Health Access Initiative</td>
</tr>
<tr>
<td>International Organization for Migration</td>
<td>College of Medicine</td>
<td>IFAKARA</td>
</tr>
<tr>
<td>Military Health Services</td>
<td>Jhpiego</td>
<td>Jhpiego</td>
</tr>
<tr>
<td>Nets for Life</td>
<td>Plan International</td>
<td>Pan African Mosquito Control Association</td>
</tr>
<tr>
<td>President’s Malaria Initiative</td>
<td>Population Services International</td>
<td>President’s Malaria Initiative</td>
</tr>
<tr>
<td>WHO</td>
<td>President’s Malaria Initiative</td>
<td>Swiss Embassy</td>
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<tr>
<td>World Vision International</td>
<td>WHO</td>
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<th>Botswana</th>
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<td>Akros</td>
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<td>Botswana University of Agriculture and Natural Resources</td>
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<tr>
<td>University of Botswana</td>
<td>President’s Malaria Initiative</td>
<td>MACHA Research Trust</td>
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<tr>
<td>WHO</td>
<td>WHO</td>
<td>Malaria Control and Elimination Partnership in Africa (PATH)</td>
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<th>Zimbabwe</th>
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<th>Seychelles</th>
<th>South Africa</th>
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