The United Republic of Tanzania

Ministry of Health, Community Development, Gender, Elderly and Children

NATIONAL MALARIA STRATEGIC PLAN 2021-2025

TRANSITIONING TO MALARIA ELIMINATION IN PHASES

NATIONAL MALARIA CONTROL PROGRAM

NOVEMBER 2020

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Preface

The purpose of this National Malaria Strategic Plan is to provide a comprehensive technical guidance to stakeholders and development partners for the period of five years (2021-2025), focusing on transitioning to malaria elimination in phases in Tanzania by 2030.

This Strategic Plan is guided by the following principles; a) Country ownership and leadership – it has ensured that the plan is aligned with the National Development Plan, National Health Sector Strategic Plan and National Planning and Financial Systems, b) Inclusive and coordinated partnerships – the NMCP is under the umbrella of the Ministry of Health, Community Development, Gender, Elderly and Children and works in collaboration with several internal and external partners to reduce duplication and fragmentation of efforts, c) Accountability – the Ministry of Finance and Planning is implementing a performance based financing mechanism; all partners are accountable for their commitments and responsibilities to their beneficiaries through this tool, d) Evidence based and results oriented – as a result of the recommendations of the 2020 Malaria Program Review the new Strategic Plan aims to achieve the most effective and efficient use of resources as well as ensuring that the implementation of the agreed interventions is scaled up in a well-coordinated manner, e) Technically sound – targeting of interventions has been evidence-based guided by the malaria epidemiological stratification which has been done up to sub-national level and in line with the WHO's Global Technical Strategy, f) Feasibility – the NMSP has taken into consideration the relevance and acceptability of the selected interventions by the communities and assessed the capacity of the health sector to deliver the required health services, g) Cost effectiveness – the NMSP has also addressed the principle of value for money where the best use of resources available is earmarked for the provision of services that will lead to maximum reduction of morbidity and mortality.

This NMSP 2021-2025 is available in two versions; comprehensive long and abridged version. Parallel to the development of NMSP 2021-2025, this document will lead updating and/or developing of different thematic guidelines to roll out this technical strategy.

By taking forward this strategy, the country hopes to scale-up malaria interventions for control in high to moderate transmission areas and increase responses in low and very low transmission areas advancing towards malaria elimination. By doing so the strategy will facilitate the country to reach its goal and broad health related targets.

Recent past progress on malaria has shown us that, with adequate investments, right mix of strategies and commitment, remarkable achievements can be obtained.

I remain confident that if we act with technical focus and determination, we can beat malaria disease once and for all.

Dr. Dorothy O. Gwajima (MP)

Minister for Health, Community Development, Gender, Elderly and Children

Acknowledgment

The preparation of the National Malaria Strategic Plan (NMSP) 2021-2025 was coordinated by technical leadership of Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) through National Malaria Control Program (NMCP), WHO country office and Swiss TPH. The three institutions formed the core technical coordination team.

The strategy was developed in close collaboration with Government ministries, departments, organizations, local and international resourceful persons. The development process involved extensive consultation process that began by a first workshop in March 2020 that involved participants from NMCP, PORALG, Ifakara Health Institute (IHI) and Swiss TPH. Through this workshop a zero draft strategy was developed and was later shared to all stakeholders through a series of video conference sessions as precaution to COVID 19 pandemic. Stakeholders who provided inputs through virtual meetings include Global Fund external consultant, international experts from RBM, WHO-AFRO, Global Fund, PMI and other Development partners. The development process was concluded after adoption by MoHCDGEC management in October, 2020.

The Ministry gratefully acknowledges the important contribution of NMCP, WHO country office and Swiss TPH for the technical coordination provided by the three institutions.

The Ministry wishes to thank the Health unit of the President's Office for Regional Administration and Local Government (PORALG) and other Ministries sections and Departments for providing information on National level policies and guidelines. The MoHCDGEC would like to commend the dedication and hard work by sharing valid technical inputs to strategic and monitoring framework and sharing information on available resources which shaped the strategy's business plan.

For the same reason the acknowledgement is also extended to institutions whose names are not listed in this statement of appreciation. The Ministry, in addition, would like to extend appreciation to Dr. Fabrizio Molteni from Swiss TPH and Dr. Sigsbert Mkude from IHI for investing their time to accomplish the development of this Strategic Plan.

Last but not least, special thanks to the Government of Tanzania, RBM, ALMA, Swiss Development Cooperation, PMI and WHO Tanzania Country office for availing financial support to make the development process successful.

Prof. Abel N. Makubi

Permanent Secretary (Health)

Acronyms

ABER	Annual Blood Examination Rate
ACD	Active Case Detection
ACT	Artemisinin Based Combination Therapy
ADDO	Accredited Drug Dispensing Outlet
ADR	Adverse Drug Reaction
AFRO	African Region (WHO)
AIDS	Acquired Immune Deficiency Syndrome
AIM	Action and Investment to defeat Malaria
AL/ALu	Artemether Lumefantrine
ALMA	African Leaders against Malaria
AMFm	Affordable Medicines Facility for Malaria
ANC	Antenatal Care
AOP	Annual Operational Plan
API	Annual Parasite Rate
AQ	Amodiaquine
ARV	Anti Retro Viral
AS	Sickle Cell Heterozygotes
BEMIS	Basic Education Management Information System
BEST	*Basic* Education Statistic
BMGF	Bill and Melinda Gates Foundation
BP	Business Plan
Bs	*Bacillus sphaericus*
Bti	*Bacillus thuringiensis* var. *israelensis*
CBHC	Community Based Health Care
CBMC	Community Based Malaria Care
CBO	Community Based Organization
CBS	Case Based Surveillance
CC	City Council
CCA	Community Change Agent
CCHP	Comprehensive Council Health Plan
CCM	Community Case Management
CDC	Center for Disease Control and Prevention
CFR	Case Fatality Rate
CHF	Community Health Fund
CHMT	Council Health Management Team
CHSW	Community Health and Social Welfare
CHV	Community Health Volunteers
CHW	Community Health Workers
CLM	Commodities and Logistics Management
CmCM	Community Malaria Case Management
CORP	Community Owned Resource Persons
COVID	Corona virus disease
CPIR	Commodity Procurement Information Request
CPM	Co-Payment Mechanism
CPT	Co-trimoxazole Preventive Treatment
CQ	Chloroquine
CSO	Civil Society Organization
CTC	Care and Treatment Centre
CUHAS	Catholic University of Health and Allied Sciences
DBS	Dry Blood Spot
DC	District Council
DDT	Dichloro Diphenyl Trichloroethane
DHIS2	District Health Information System 2
DHS	Demographic and Health Survey
DMFP	District Malaria Focal Person
DMO	District Medical Officer
DMT	District Management Teams
DP	Dehydroartemisinine Piperaquine
DPS	Director Preventive Services
DQA	Data Quality Assessment
DRC	Democratic Republic of Congo
DSM	Dar es Salaam
DT&PT	Diagnosis Treatment and Preventive Therapies
E8	Elimination eight countries
EAC	East African Community
EIA	Environmental Impact Assessment
EIR	Entomological Inoculation Rate
EMA	European Medicine Agency
EPI	Expanded Program for Immunization
EQA	*External quality assurance*
FBO	Faith Based Organizations
FLB	Front Line Buyer
FP	Family Planning
FTAT	Focal Test and Treatment
GDP	Gross Domestic Product
GF	Global Fund
GLMI	Great Lakes Malaria Initiative
GMP	Global Malaria Program
GoT	Government of Tanzania
GPS	Global Positioning System
GPSA	Government Procurement Services Agency
GTS	Global Technical Strategy
HBR	Human Biting Rate
HBF	Health Basket Fund
HBHI	High Burden High Impact
HCW	Health Care Worker
HF	Health Facility
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HEPS	Health Education and Promotion Services
HQ	Head Quarter
HR	Human Resources
HRH	Human Resources for Health
HRHIS	Human Resources for Health Information System
HRP2	Histidine Rich Protein
HSCR	Holistic Supply Chain Review
HSSP	Health Sector Strategic Plan
HSW	Health and Social Welfare
iCHF	improved Community Health Fund
ICT	Information and Communication Technology
ID	Identification Card
IDSR	Integrated Disease Surveillance and Response
IEC	Information, Education and Communication
IHI	Ifakara Health Institute
IHR	International Health Regulation
IHRDC	Ifakara Health and Research Development Centre
ILS	Integrated Logistic System
IMCI	Integrated Management of Childhood Illness

IMVC Integrated Malaria Vector Control
IPC Interpersonal Communication
IPD In-Patient Department
IPT Intermittent Preventive Treatment
IPTi Intermittent Preventive Treatment for infants
IPTp Intermittent Preventive Treatment for pregnant women
IRM&M Insecticide Resistance Monitoring and Management
IRS Indoor Residual Spraying
ISO International Organization for Standardization
IST Insecticide Susceptibility Test
ITN Insecticide Treated Nets
IV Intra venous
IVD Immunization and Vaccine Development
KCMC Kilimanjaro Christian Medical Center
KEMRI Kenya Institute for Medical Research
LAB Laboratory
LBW Low Birth Weight
LGA Local Government Authority
LLINs Long Lasting Insecticide Treated Nets
LMIS Logistic Management Information System
LP Leadership, Partnership
LPR Leadership, Partnership and Resource Mobilization
LSD Low Single Dose
LSM Larval Source Management
LSR Lead Sub Recipient
MAH Marketing Authorization Holders
MC Municipal Council
MCM Malaria Case Management
MDA Mass Drug Administration
MDAs Ministries, Departments and Agencies
MDGs Millennium Development Goals
MDTPT Malaria Diagnosis, Treatment and Preventive Therapies
MEEDS Malaria Epidemic Early Detection System
MEEWS Malaria Epidemic Early Warning System
MFP Malaria Focal Person
MIP Malaria in Pregnancy
MIS Malaria Indicator Surveys
MoFP Ministry of Finance and Planning
MoHCDGEC Ministry of Health, Community Development, Gender, Elderly and Children
MOP Malaria Operational Plan
MP Member of Parliament
MPR Malaria Program Review
MR Measles Rubella
MRC Mass Replacement Campaign
mRDT malaria Rapid Diagnostic Test
MSD Medical Stores Department
MSDQI Malaria Services & Data Quality Improvement
MTAT Mass Test and Treatment
MTEF Medium Term Expenditure Framework
MTR Mid-Term Review
MUHAS Muhimbili University of Health and Allied Sciences
MVS Malaria Vector Surveillance
NA Not Appropriate/Not Available
NACP National AIDS Control Program
NBS National Bureau of Statistics
NCD Non Communicable Diseases
NEMC National Environmental Management Council
NGMDT&PT National Guidelines for Malaria Diagnosis Treatment and Preventive Therapies
NGO Non-Governmental Organization
NHA National Health Accounts
NHIF National Health Insurance Fund
NHLQA/QC National Health Laboratory for Quality Control and Quality Assurance
NHP National Health Policy
NIMR National Institute for Medical Research
NMCP National Malaria Control Program
NMSP National Malaria Strategic Plan
NPA *National Plan of Action*
NRL National Reference Laboratory
NSA Non-State Actor
NTD Neglected Tropical Diseases
OC Operation Costs
OPD Out Patient Department
ORG Organization
PAAR Prioritized Above Allocation Request
PBO Piperonyl Butoxide
PCD Passive Case Detection
PCR Polymerase Chain Reaction
PF Performance Framework
PFM Public Financial Management
PHC Primary Health Care
PLHIV People Living with HIV/AIDS
PMCTC Prevention of Mother to Child Care
PMI President's Malaria Initiative
PMS Post Marketing Surveillance
PO President's Office
PO-RALG President's Office Regional Administration and Local Government
PPE Personal Protective Equipment
PPM Pooled Procurement Mechanism
PPP Public Private Partnership
PQ Primaquine
PR Principal Recipient
PR Parasite Rate
PSM Procurement and Supply Chain Management
PSU Pharmaceutical Services Unit
PT Preventive Therapies
PUDR Progress Update Disbursement Report
PV Prime Vendors
PW Pregnant Women
Q Quarter
QAACT Quality Assured ACT
QAQC Quality Assurance and Quality Control
QC Quality Control
RALG Regional Administration and Local Government
RAS Regional Administrative Secretary
RBM Roll Back Malaria
RC Regional Commissioner
RCH Reproductive and Child Health
RCHS Reproductive and Child Health Services
RDT Rapid Diagnostic Test
RHMT Regional Health Management Team
RMFP Regional Malaria Focal Person

RMO	Regional Medical Officer
RS	Regional Secretariat
RSSH	Resilient and Sustainable Systems for Health
RTS,S	Malaria Vaccine
SADC	Southern African Development Community
SBC&A	Social Behavior Change & Advocacy
SBCC	Social Behavior Change Communication
SDG	Sustainable Development Goal
SDM	Service Delivery Mechanism
SMC	Seasonal Malaria Chemoprevention
SME	Surveillance Monitoring and Evaluation
SMMSP	Supplementary Malaria Midterm Strategic Plan
SMPS	School Malaria Parasitological Survey
SNP	School Net Program
SO	Strategic Objective
SOP	Standard Operating Procedures
SP	Sulfadoxine Pyrimthamine
SR	Sub Recipient
SS	Homozygote SS in SCD
SCD	Sickle Cell Disease
SSR	Sub-Sub Recipient
STD	Standard
STIFL	Swiss Tropical Institute Field Laboratory
SUFI	Scale up for Impact
TAPAMA	Tanzania Parliamentarians against Malaria
TAQC	Test Accuracy and Quality Control
TASAF	Tanzania Social Action Fund
TAT	Test and Treatment
TBD	To be defined
TBS	Tanzania Bureau of Standard
TC	Town Council
TDHS	Tanzania Demographic and Health Survey
TDV	Tanzania Development Vision
TEMT	Towards Elimination of Malaria in Tanzania
TES	Therapeutic Efficacy Studies
TFDA	Tanzania Food and Drug Authority (now TMDA)
TFDCA	Tanzania Food, Drugs and Cosmetics Authority
THMIS	Tanzania HIV and Malaria Indicators Survey
TMA	Tanzania Meteorological Agency
TMDA	Tanzania Medicine & Medical Devices Authority
TMS	Tanganyika Medical Service
TNCM	Tanzania National Coordinating Mechanism
TNVS	Tanzania National Voucher Scheme
TOR	Term of Reference
TPH	Tropical and Public Health
TPR	Test Positivity Rate
TPRI	Tropical Pesticide Research Institute
TRC	Targeted Replacement Campaign
TRP	Technical Review Panel
TV	Television
TWG	Technical Working Group
U5	Under fives
UCC	Universal Coverage Campaign
UHC	Universal Health Coverage
UMCP	Urban Malaria Control Project
UNDP	United Nations Development Program
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
US	United States
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government
VAWC	Violence against Women and Children
VCI	Vector Control Intervention
VEO	Village Executive Officer
WAMBO	Global Fund Electronic Logistic Software
WB	World Bank
WHO	World Health Organization
WMR	World Malaria Report

Executive summary

Introduction: The Government of Tanzania through the National Malaria Control Program (NMCP) and in collaboration with her partners has made significant strides in the fight against malaria, resulting in remarkable reduction in the malaria burden. This national malaria strategic plan, covering the period 2021 to 2025, aims to ensure that Tanzania consolidates the gains made in reducing the burden of malaria and accelerating the country towards the vision of a society free of malaria.

Demography: The total population of mainland Tanzania in 2021 is estimated at 57,724,380 with a population growth rate of 2.7%, and an average of 5.1 household members. The rapid population growth has an impact on the available resources, especially on public expenditures including health.

Socio-economic status: The gross domestic product (GDP) growth in Tanzania shows a rising trend, except for years when facing a food crisis, power crisis, and global economic and financial crisis. Since 2005, Tanzania's GDP annual growth rate averaged 7%, which was in line with poverty reduction strategy target of 6%–8% per annum. Improved economic status of a country has a role to play in reducing malaria burden as there are several evidences that suggest modern housing provides greater protection against malaria vectors than traditional housing. More than 80% of malaria transmission in sub-Saharan Africa occurs indoors. Therefore, reducing the entry of malaria vectors indoors by modifying the housing structures reduce the numbers of malaria cases.

Malaria stratification: The Supplementary Malaria Mid-term Strategic Plan (SMMSP); 2018-2020 stratified malaria burden according to observed epidemiological diversity of four epidemiological strata (Very low, Low, Moderate and High), and set up for implementation of intervention packages to match with the heterogeneity. Malaria stratification, provides guidance to the transition towards elimination in phases. It is an approach that facilitates strategic adjustments to invest for impact and burden reduction in moderate to high transmission areas and disadvantaged population. Also to further decrease low transmission areas and to advance towards malaria elimination in very low transmission settings.

Malaria Situation analysis: Between 1990-early2000's malaria in Tanzania was largely between the meso- and hyper-endemic classes with a national average pfpr for children aged 2 to 10 years ($pfpr_{2-10}$) above 40%. Since early years of 2000s a marked reduction of parasite prevalence was recorded reaching a hypo-endemicity level in the most recent years. The geographical distribution of malaria prevalence progressively reveals a heterogeneous distribution from very low endemicity in the central belt from the North to South to notably higher endemicity in the north-west and south east of the country. Areas along the central belt are characterized with highlands and relatively low temperatures while those in the North –west and South-east are mainly Coastal lowlands regions and the basins around the three big Lakes hence they are warm and humid, with suitable temperatures for malaria transmission ranging from 17°C to 30°C through most of the year.

Malaria Program performance: The goal of the ended NMSP 2015–2020 was to reduce the average country malaria prevalence from 10% in 2012 to 5% in 2016 and further in 2020 to less than 1%. During its mid-term review conducted in 2017 it was realized the set national target was unlikely to be achieved. The SMMSP 2018 – 2020 was developed to re-orient strategic direction. Findings of the SMMSP 2018-2020 review conducted towards the end of 2020 (MPR 2020) are as follows; percentage of households population with access to an LLIN within their household increased from a baseline of 39% to 65% in 2017 with the coverage higher in more wealthy population and in urban areas, IRS coverage at 3.7% (2017 MIS) was far below the set target of 25% to be achieved by 2020, average testing rate of children under the age of 5 years with fever who had a malaria test the same or next day after onset of a disease was increased to 43.1% in 2017 from 35.9% in 2015 and 24.9 in 2012 and percentage of children under age 5 with fever who were treated with recommended antimalarial the same or next day following the onset of fever dropped from 30% in 2015 to 25.2% in 2017. Test rate is lower in rural areas and low wealth quintile population, compared to the level of urban areas and higher wealth quintiles. Information available on Bio-larviciding was on procurement efforts and nothing on technical operation issues to reflect field implementation achievements and challenges.

MPR 2020 also showed that malaria vector control accounts for 50% - 60% of the annual malaria budget while malaria case management accounts for 20%-30%. Development partners are main contributors direct financing of malaria control activities towards the procurement of the recommended preventive and curative malaria commodities. The MPR 2020 report recommended to explore innovative multiple distribution channels to ensure national average LLIN access reach 80%, improve access to malaria testing and treatment beyond health facilities to adequately reach social-economic disadvantaged community (rural & low wealth quantile) and develop national framework and indicators for routine monitoring implementation of Bio-larviciding in the councils. The report also recommended to quantify and cost Bio-Larviciding national needs guided by technical requirements of different malaria strata in relation to seasons of the year.

National Malaria strategic plan 2021-2025: Tanzania becomes a society free from malaria is the vision of this strategic plan. The goal is to reduce the average malaria prevalence in children aged less than 5 years ($pfpr_{6-59}$) from 7% in 2017 to less than 3.5% in 2025. The goal reflects the level of malaria transmission. It is monitored through national representative surveys after every 3-5 years. The NMSP 2021-2025 has, three core and three supportive strategic components. The core strategies are: integrated malaria vector control; malaria diagnosis, treatment & preventive therapies, and; surveillance, monitoring & evaluation. The supportive strategies are: commodities and logistics management; social behavior change & advocacy, and leadership, partnership and resource mobilization. Each strategy has a uniform outline which consist of strategic objective, strategic approach and service delivery mechanism. The impact indicators measure strategic objectives, while outcome indicators measure strategic approaches and output indicators measure deliverables of the service delivery mechanism.

Implementation framework: The implementation of NMSP 2021-2025 is through Annual Operational Plan (AOP). The AOP is developed annually to: a) inform the status of implementation of the interventions and activities, b) review the financial inputs and the gaps and c) monitor implementation according to targeted activities and their timelines. The AOP originate from a corresponding year of the three years detailed Business Plan (BP). The BP need to be updated to verify the needed and anticipated resources as well as the expected funding gaps. NMCP in collaboration with PO-RALG, Development and Implementing Partners, will continue to facilitate effective and efficient implementation of malaria interventions. NMCP is responsible for overall management of both malaria control and elimination phases in the country. However, majority of the issues are multi-sectoral and involve a range of stakeholders. Delivery of health services is shared among the MoHCDGEC and PO-RALG whereby PO-RALG manages council and regional health services.

By adopting this technical strategy, malaria stakeholders in the country have endorsed the bold vision of malaria elimination by 2030, and set the ambitious new target of reducing the country malaria transmission average from 7% in 2017 to less than 3.5% in 2025. They also agreed to strengthen health systems and intensify country wide community engagement to scale up malaria responses to protect everyone at risk.

Chapter 1: Policy and Programming environment

Introduction

The Government of Tanzania (GoT) through the National Malaria Control Program (NMCP) and in collaboration with her partners has made significant strides in the fight against malaria, resulting in remarkable reduction in the malaria burden. In Mainland Tanzania, the parasite prevalence in children under the age of five years dropped from 14.8% in 2015 to 7.5% in 2017. The number of confirmed malaria cases reported in health care facilities declined by 23% from 7.7 million in 2015 to 5.9 million in 2020. The incidence of malaria per 1000 population has dropped to 106 in 2020 from 162 in 2015, representing a 35% decline over the 5-years period. This national malaria strategic plan, covering the period 2021 to 2025, aims to ensure that Tanzania consolidates the gains made in reducing the burden of malaria and accelerating the country towards the goal of a society free of malaria. This strategic plan is in line with the vision outlined in several global, regional and national frameworks and initiatives described below.

Global and Regional Malaria Situation, Policy Framework and Initiatives

World Malaria Report (2020)

According to the 2020 World Malaria Report[1], there were an estimated 229 million malaria cases in 2019 in 87 malaria endemic countries, declining from 238 million in 2000. The World Health Organization (WHO) African Region, with an estimated 215 million cases in 2019, accounted for about 94% of cases followed by South-Est Asia (3%) and the WHO Eastern Mediterranean (2%). Notably, 19 countries in Sub Saharan Africa (including Tanzania) and India carried 85% of the global malaria burden. Malaria case incidence (cases per 1000 population at risk) reduced from 80 in 2000 to 58 in 2015 and 57 in 2019 globally. Between 2000 and 2015, global malaria case incidence declined by 27%, and between 2015 and 2019 it declined by less than 2%, indicating a slowing of the rate of decline since 2015.

Globally, malaria deaths have reduced steadily over the period 2000 to 2019, from 736 000 in 2000 to 409 000 in 2019. The percentage of total malaria deaths among children aged under 5 years was 84% in 2000 and 67% in 2019. The malaria mortality rate (deaths per 100 000 population at risk) reduced globally from about 25 in 2000 to 12 in 2015 and 10 in 2019, with the slowing of the rate of decline in the latter years. Malaria deaths in the WHO African region reduced by 44%, from 680 000 in 2000 to 384 000 in 2019, and the malaria mortality rate reduced by 67% over the same period, from 121 to 40 deaths per 100 000 population at risk.

The Sustainable Development Goals – 2016 - 2030

The Sustainable Development Goals (SDGs)[2] constitute a global post 2015 development agenda with a vision rooted in the values of equity, sustainability, peace and security and the elimination of poverty. The 17 goals are balanced between development and protection of the human environment and social development and equity. They are universal in that they are applicable to high, middle and low income countries. Goal number three seeks to ensure health and well-being for all, at every stage of life. The Goal addresses all major health priorities, including reproductive, maternal and child health; communicable, non-communicable and environmental diseases; universal health coverage; and access for all to safe, effective, quality and affordable medicines and vaccines. It also calls for more research and development, increased health financing, and strengthened capacity of all countries in health risk reduction and management.

It is well documented that malaria is a major cause and consequence of poverty and inequity and therefore fits intricately into the Sustainable Development agenda 2016-2030 which has an overarching focus on reducing global inequities and ending poverty, and emphasizes six essential elements; people, prosperity, dignity, justice, the planet and partnership. This broad development agenda of the SDGs provides an excellent platform for widening the circle of engagement and intensify multi-sectoral and intercountry collaboration to defeat malaria.

[1] World Health Organization. 2020. World Malaria Report, 2020. Geneva, Switzerland. https://www.who.int/docs/default-source/malaria/world-malaria-reports

[2] United Nation Department of Economic and Social Affairs. 2015. Sustainable development goals. https://sustainabledevelopment:Un.org/topics/sustainabledevelopmentgoals

The World Health Organization's Global Technical Strategy (GTS) for Malaria 2016-2030[3]

The strategy is a fundamental evidence based strategic document for malaria control and elimination. It was adopted by the World Health Assembly in May 2015. The strategy defines goals, milestones and targets on the path to a world free of malaria. The goal is to reduce malaria mortality and incidence by at least 40% by 2020 and 90% by 2030 (baseline of 2015), eliminate malaria from countries in which malaria was transmitted in at least 10 countries in 2020 and at least 35 countries by 2030 and the third goal is to prevent the re-establishment of malaria in all countries that are malaria free.

Roll Back Malaria – Action and Investment to defeat malaria (2015)

The global response to malaria is also shaped by the Roll Back Malaria (RBM) 'Action and investment to defeat malaria (2015)'[4], another important strategic document which was developed in tandem with the GTS. Action and Investment to defeat Malaria (AIM) (2015), complements the technical document by WHO through direct calls for a stronger engagement of non-health sectors and for a smart integration into existing health systems. It therefore makes a clarion call for the broader stakeholders to work towards achieving the overall malaria vision, goals and milestones of the GTS. This synergy streamlines the approach of the two documents and brings harmony to the malaria control efforts globally. Furthermore, AIM is aligned with the two supporting elements of the WHO GTS; (i) creating an enabling environment and (ii) innovation. It shows how multi-sectoral and intercountry partnerships and a people centred approach are crucial to progress in both areas.

The High Burden to High Impact Initiative

World Malaria report (2019) recognizing that progress in malaria control globally had stalled, WHO and the Roll Back Malaria partnership (RBM) embarked on an initiative to respond to the rising cases through the High Burden to High Impact (HB-HI) initiative. The initiative aims at reaffirming the global commitment to malaria control and accelerating strategic interventions in the countries with the highest burden to enhance progress towards the GTS goals. It calls for the efficient use and expansion of resources, particularly domestic financing. A more effective use of data and evidence will help guide the selection of appropriate mix of interventions for each setting; identify and strengthen the modes of delivery; intensify the use of those interventions; fast-track the introduction of new interventions and commodities as they become available and; demonstrate the value of investing in malaria. This will require efforts to increase domestic and external resources and use of strategic information for policy and action to reduce malaria mortality. The HBHI initiative is centred on four elements (political will, strategic information, better guidance and coordinated approach) feeding into tangible actions to be implemented in three major phases. Phase one is a country-led self-assessment to identify gaps, followed by phase two where malaria stakeholders in the respective country discuss about tangible interventions to fill the gaps and, finally, phase three, an ongoing period of implementation and follow up on the actions.

The East Africa and Great Lakes framework to control Malaria

'The Great Lakes Malaria Initiative' (GLMI) is promoted by the East African Community (EAC) and the Democratic Republic of Congo (DRC) to develop strategies to control cross border malaria in these countries. The objectives of the initiative are a) to review the country progress, impact and gaps in malaria control in cross border regions including high-risk areas for malaria epidemics; and b) to agree on a framework for collaboration and harmonization of malaria policies/strategies and implementation of malaria interventions across borders to accelerate progress towards malaria elimination.

Malaria Elimination in Southern Africa

The Elimination Eight Initiative (E8) is a coalition of eight countries working across national borders to eliminate malaria in southern Africa by 2030. As the malaria response arm of the Southern Africa Development Community (SADC), the E8 is pioneering an ambitious regional approach and driving collective action to end this deadly disease once and for all. Guided by the belief that countries are stronger when they work together, the E8 is building a model that will inform coordinated efforts in southern Africa and beyond. The E8 countries currently involved in the initiative are: Angola, Botswana, Eswatini, Mozambique, Namibia, South Africa, Zambia and Zimbabwe. Tanzania, although not involved in the E8 initiative, expect to benefit from the lesson learnt by fellow SADC countries.

[3] WHO.2015. The Global Technical Strategy for Malaria – 2016-2030. Geneva, Switzerland. WHA68/2015/REC/1

[4]Roll Back Malaria. 2015. Action and investment to defeat malaria – 2016-2030 – For a malaria – free world. World Health Organization on behalf of the Roll Back Malaria Partnership

National Policy Documents

The Tanzania Development Vision 2025

The Tanzania Development Vision 2025 (TDV 2025)[5] provides direction and a philosophy for long term development. By 2025, the country desires to achieve a high quality of livelihood for its citizens, peace, stability, unity, good governance, a well-educated society and a competitive economy capable of producing sustainable growth and shared benefits by 2025. The TDV 2025 recognizes health as one of the priority sectors contributing to a high- quality livelihood for all Tanzanians.

National Health Policy 2020 (draft)

The Government is in the process of reviewing and updating the National Health Policy (NHP) 2007[6]. A draft NHP 2020 and a draft Policy Implementation Strategy 2020-2030 are at an advanced stage. The NHP **vision** is to have a healthy and prosperous society that contributes fully to the development of individuals, their communities and the nation. Its **mission** is to provide sustainable health services of acceptable quality standards for all citizens without financial constraints, based on geographical and gender equity. The **main objective** of the health policy is to increase the life expectancy and quality of life of citizens by reducing deaths, diseases and disabilities, especially among those most at risk, by establishing a health care system that meets the needs of all citizens.

Health Policy Implementation Strategy 2020 - 2030

The Health Policy Implementation Strategy elaborates all elements of the policy, and is fully integrated into this strategic plan. The Policy Implementation Strategy has a total of 34 goals that include measures to achieve the ultimate goal. The objectives are organized into nine areas (number of goals in bracket) including: preventive services (5), medical services (8), quality of care (1), training (1) regulatory and research services (2), human resources for health care delivery (4), the private sector (1), international cooperation (1), funding for health care and cross-border issues (5). The Policy Implementation Strategy contains a total of 97 statements describing the Policy's commitment to various areas of health care delivery. The implementation strategies are clearly defined for each purpose and has a set the target, timeframes and resources required.

Health Sector Strategic Plan V

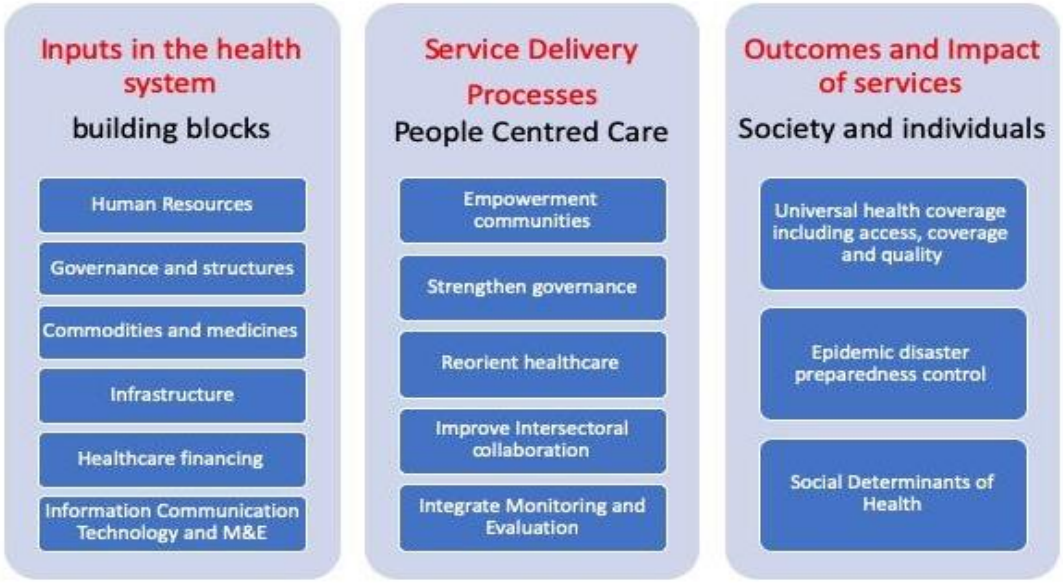
The current Health Sector Strategic Plan (HSSP) V[7] for the years 2020-2025, has identified three outcomes and impact of health services: 1) **Universal health coverage** is about ensuring that people have access to the health care they need without suffering financial hardship and covers three aspects: a) Accessibility of essential service for all(including geographical, financial and socio-cultural)); b) Quality of essential services (including expanding coverage of essential package health intervention, quality and acceptability for better outcome of health services); and c) Financial risk protection (especially for the poor and vulnerable groups). 2) **Preparedness and proper response to epidemics and emergencies or disasters** is in the context of the global health security agenda and covers areas of: a) Epidemics, especially new epidemics as a result of globalization; b) Antimicrobial resistance, prudent use of medicines and c) Disasters with health impact, e.g. as result of climate change or as result of urbanization. 3) **A healthier population**: Better health, increase of life expectancy requires interventions beyond the mandate of the health sector and, therefore, asks for introducing health related matters in all policies and multi-sectoral collaboration at all levels. Control of both communicable and non-communicable diseases ask for an integrated approach with all sectors. Equity is much related to determinants of health, especially in those aspects that are not directly related to universal health coverage, e.g. cultural factors, gender, health literacy. The HSSP V building blocks are illustrated in Figure 1.

[5] United Republic of Tanzania, Ministry of Health, Community Development, Gender, Elderly and Children. 2017. National health policy – 2017. Dar-es-Salaam. United Republic of Tanzania

[6] United Republic of Tanzania, Ministry of Health and Social Welfare 2007. National Health Policy

[7] United Republic of Tanzania, Ministry of Health, Community Development, Gender, Elderly and Children. 2021. Health sector strategic plan – July 2021 – June 2025 (HSSP V)

Figure 1: Building blocks for the implementation of HSSP V



Policy Guideline for Community Based Health Services

Community Based Health Services are an integral part of the primary health care system. In order to achieve Universal Health Coverage (UHC) and accelerate the achievements of the SDGs, the services of any community based program depend on active and participatory involvement of the community in the implementation of community health interventions.[8] In line with the National Health Policy, the government has re-introduced the use of voluntary community based health workers to complement the critical shortage of human resource for health in Tanzania and contribute to expanding access to quality health intervention for better health outcome. The overall objective is to create sustainable and functional national community services for improving health and social wellbeing of all communities with a focus of those most at risk to be more responsive to the needs of the people. There are six specific objectives; (i) establish sustainable workforce of Community Health and Social Welfare (CHSW) volunteers with skills, knowledge and commitment to deliver community based and social welfare services, (ii) support CHSW through mobilization and optimized utilization of resources, (iii) Enhance the delivery of community based health service which are fully integrated into existing systems and structures at all levels, (iv) to strengthen the capacity of community and health social welfare structures for the delivery and coordination of services at all levels, (v) Enhance strong community participation, ownership, sustainability mechanism of community based health service welfare and (vi) strengthen inter-sectoral collaboration to address cross cutting issues for community health and social welfare.

Layout of NMSP 2021-2025

The NMSP 2021-2025 is organized into six (6) chapters and nine (9) annexes. Following this introduction chapter two describes the country profile. Chapter three dwells on the malaria situation analysis in mainland Tanzania. Chapter four provides a snapshot of the review of implementation of NMSP 2015-2020. Chapter five provides details of the NMSP 2021-2025 strategic areas and chapter six presents the implementation framework, work plan and cost of the NMSP 2021-2025.

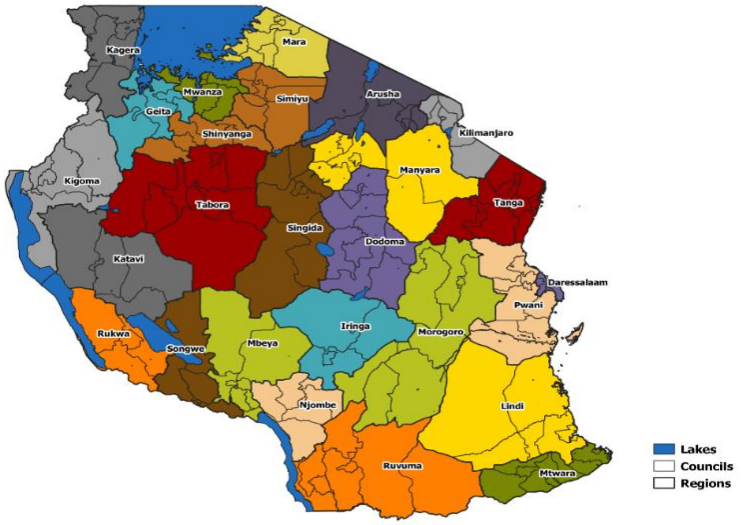
[8] United Republic of Tanzania, Ministry of Health, Community Development, Gender, Elderly and Children.2020. Policy guidelines for community based health services – towards sustainable community health and social welfare services, leaving no one behind. Dar-es-Salaam, United Republic of Tanzania, March 2020

Chapter 2: Country profile

Administrative setup

Mainland Tanzania is divided into two main administrative levels: regions and councils. Several councils (average seven) form a region. The councils are categorized according to population settings: district councils (mainly in rural settings), town, municipal and city (mainly urban settings). Councils are divided into four to five divisions, and each division has three to four wards. Five to seven villages form a ward. The council is the most important administrative and implementation authority for public services, including policies of the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) and consequently those of the National Malaria Control Program (NMCP). The administrative councils and regions set up has increased in number in recent years and currently includes 26 regions and 184 councils. See Figure 2.

Figure 2: Tanzania: Administrative Setup



Demography

The total population of mainland Tanzania in 2021, according to the projection of 2012 census, is 57,724,380[9]. Tanzania's population grew by 10,485,399 persons or 30.4% since 2002 census, equivalent to approximately 1 million per year. In the inter-censual period of 2002–2012, the growth rate was 2.7%, compared to 2.9% per annum in the previous period (1988–2002). Tanzanian households consist of an average of 5.1 members. The rapid population growth has an impact on the available resources, especially on public expenditures on education, health, water and sanitation, more so in urban areas, as well as demand of other resources such as land (NBS, Census, 2012).

Geography and Climate

Tanzania lies mostly between latitudes 1° and 12°S and longitudes 30° and 40°E and has a tropical climate, with regional variations due to the topography. The Coastal lowlands extend from the seashore of Indian ocean for about 150kms inland to an altitude of about 300m. The Coastal lowlands regions are warm and humid, with temperatures ranging from 17°C to 30°C through most of the year. The basins around Lakes Victoria, Tanganyika and Nyasa, have relatively high temperatures and humidity and heavier rainfall. The greater part of Tanzania consists of the Central Plateau, around 900–1,800m, which is punctuated with mountain ranges. The Central Plateau has a marked diurnal temperature variation, being warm to hot during the day and cool at night, a short season of precipitation and a long dry period. The Highland regions, including the Northern and the Southern Highlands, are more temperate, with temperatures around 20–23°C throughout the year, except during the cool season (June–September), where temperatures drop below 17°C.

[9] nbs.go.tz/index.php/en/

The above ecological settings influence malaria transmission through the following major factors: a) precipitations are directly related to the formation of breeding sites suitable for hosting malaria vectors aquatic stage and, therefore, to the density of adult mosquitoes; b) ambient minimum temperatures affect malaria transmission by increasing the duration of sporogonic cycle of parasites in the mosquitoes and, in this way, reducing the frequency of transmission; and c) relative humidity influences the life span of malaria vectors; high humidity prolongs the longevity of mosquitoes and hence the frequency of oviposition leading to increased malaria parasite transmission.

Socio-economic status

The gross domestic product (GDP) growth in Tanzania shows a rising trend, except for years when facing a food crisis, power crisis, and global economic and financial crisis. Since 2005, Tanzania's GDP annual growth rate averaged 7%, which was in line with poverty reduction strategy target of 6%–8% per annum. However, the incidence of income poverty (i.e., basic needs and food poverty) did not decline significantly. Out of every 100 Tanzanians, 36 were poor in 2000–2001 compared to 34 in 2007 and 22.8 in 2011-2012 (Household Budget Survey 2012). Income poverty varied across geographic areas, with rural areas worse off than urban.

There are several evidences that suggests modern housing provides greater protection against malaria vectors than traditional housing. More than 80% of malaria transmission in sub-Saharan Africa occurs indoors (Huho, et al. 2013). Therefore, reducing the entry of malaria vectors indoors by modifying the housing structures reduce the numbers of malaria cases. The findings show that open eaves overhanging roof and ceilings (Lindsay et al. 2002) are the major route by which *Anopheles gambiae* sensu lato enters houses and that closing them or installing a ceiling below the eaves prevents a substantial proportion of the vectors from entering the living space.

The National Health System

The National Health System is based on a Central-Council government structure. The MoHCDGEC and President's Office Regional Administration and Local Government (PO-RALG) are jointly responsible for the delivery of public health services. The central MoHCDGEC is responsible for policy formulation, development of guidelines to facilitate policy implementation and M&E of policies and implementation guidelines. The MoHCDGEC is also responsible for direct implementation of National, Zonal and Regional referral hospitals. Regional Health Management Teams (RHMTs) interpret health policies and monitor their implementation in the councils they supervise. The Regional Medical Officer (RMO) heads the RHMT and reports directly to MoHCDGEC on issues related to medical management and to PO-RALG, through the Regional Administration Secretary (RAS), on issues related to administration and management. The Council Health Management Team (CHMT) is responsible for council health services, including Dispensaries, Health centers and Hospitals. The CHMT follows guidelines for planning and management of Council health, which are issued jointly by MoHCDGEC and PO-RALG. The District Medical Officer (DMO) heads the CHMT and is in charge of all Council Health Services; is accountable to Council Executive Director on administrative and managerial matters; and reports to RMO on technical matters.

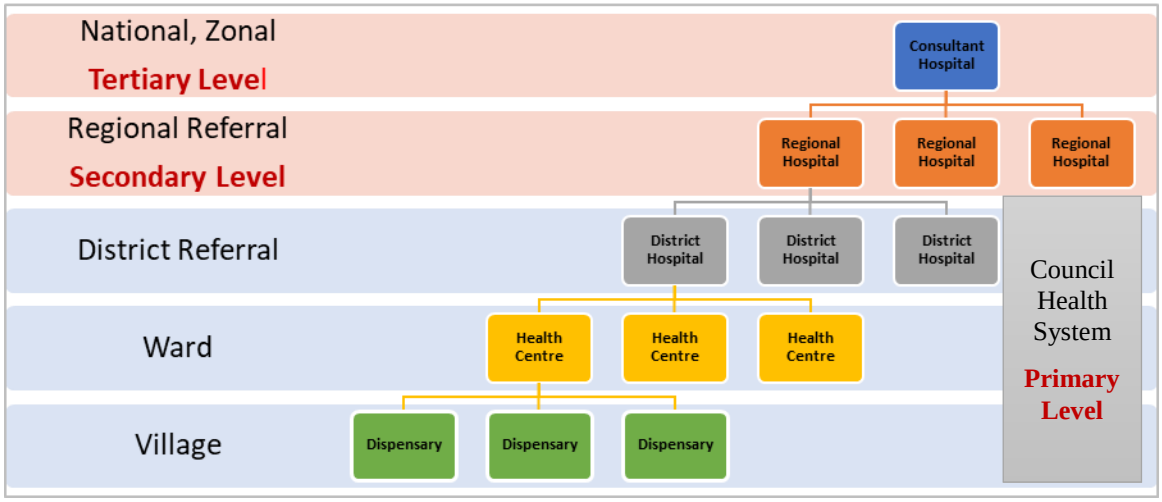
In Tanzania there are 8,365 registered and functional[10] healthcare facilities, including Hospitals, Health centers and Dispensaries (see Table 1). Public health services are delivered through government, non-profit voluntary agencies and parastatal healthcare facilities. The healthcare system in Tanzania is based on a hierarchical system represented by administrative level, type and function of facility. The system includes a referral structure from primary healthcare to tertiary level (Figure 3). A dispensary serves a population of 6,000 to 10,000 people; a health center serves 50,000–80,000; and a district hospital serves more than 250,000. A regional hospital serves as a referral center to four to eight district hospitals, four consultant hospitals (Zonal Hospitals) serve as referral centers for several regional hospitals. National Hospitals serve as referral centers for Zonal and Regional Hospitals.

Table 1: Health Facilities in Mainland Tanzania, by ownership (Source: MoHCDGEC dhis2 2020)

	Government	FBO	Parastatal	Private	Total
Hospital	113	108	8	57	286
Health centers	471	137	13	120	741
Dispensaries	6380	101	113	416	7010
Clinics	26	13	10	279	328
Total	**6990 (83.6%)**	**359 (4.3%)**	**144 (1.7%)**	**872 (10.4%)**	**8365**

[10] Reporting to DHIS2

Figure 3. Administrative, Functional Level and Type of Facilities



Malaria Services within the National Health System

All operational health facilities provide malaria curative and preventive services. In all **out patient departments**, irrespectively from ownership and level of care, suspect malaria cases are tested for parasites and, if positive, treated with recommended antimalarial medicines. Malaria testing services, by using rapid diagnostic tests, are available in virtually all health facilities in the country. Additional diagnostics procedures, including microscopy, are provided in health facilities with formal **laboratory services**. At the primary level of the health system, all dispensaries are capable to provide pre-referral management of severe diseases with parenteral antimalarials. The referred severe malaria cases are admitted in the **in-patient departments** of health centers and hospitals that are equipped to provide intra-venous treatments and further management of complications. Malaria preventive services, such as administration of intermittent preventive therapies and issuing long lasting insecticide treated nets (LLIN), are delivered in the **reproductive and child health clinics**.

Malaria vector control services, e.g. Indoor Residual Spray (IRS), mass or targeted LLIN distribution and larval source management including application of bio-larviciding, are provided at community level with different service delivery mechanisms.

Chapter 3: Malaria situational analysis

Historical perspective of malaria control in Tanzania

Pre Independence Malaria Control: German (1890–1914) and British Administration (1915–1945), post-World War II to Independence (1946–1961)

The history of malaria in Mainland Tanzania can be traced back from the colonial rule in 1890–1914, during Ward War I and post-World War II to Independence in 1946–1961. During all these times considerable efforts were made to control malaria. The German Medical Administration for example started larva mosquito control in Dar es Salaam in 1891 using oiling methods, swamp drainage and general sanitation improvement principally in the European settled areas. For malaria case management, the focus of the antimalarial campaigns in Dar es Salaam changed to malaria parasite control through quinine administration, first proposed in 1899. Mass administration of quinine under the administration began in 1901. The proportion of infected people decreased from 74% in 1902 to 35% in 1904 across Dar es Salaam.

Following World War II, dichlorodiphenyltrichloroethane (DDT) and diel Drin were introduced for purposes of IRS and in early 1956 pilot approaches were implemented using aerial spraying with diel Drin granules over swamps and creeks in Dar es Salaam. These new vector control approaches were largely limited to urban settlements and were employed in combination with continued vector control approaches using larvicides and environmental management, as well as the introduction of chloroquine (CQ) and proguanil as prophylactics in selected populations, including school children. By the end of the 1950s, several pilot control schemes were using IRS with diel Drin, gammexane or DDT, larviciding, drug-based prophylaxis and mass drug administration at various localities.

Post-Independence Malaria Control

After the country's independence in 1961, malaria assistants and orderlies, employed by the government, were integrated into urban health organizations within their towns. To a large extent, indoor residual spraying, larval source reduction and disease surveillance came to an end with a few exceptions, notably the continued larviciding work in Dar es Salaam.

Over the two decades following independence, the GoT focused its efforts on building its broader health system, expanding its community-based care implemented through village health workers. However, adverse economic conditions during the 1970s resulted in the deterioration of the health system in many urban settings, and malaria prevention was largely neglected with the exception of a few pilot approaches to CQ prophylaxis through ten-cell leaders.

Throughout the 1970s and 1980s, the focus of malaria control was on presumptive treatment of fevers with CQ. Use of CQ post-independence increased dramatically. Nevertheless, despite growing access to antimalarial for fever management, the 1980s were a period where very little was done to prevent infection.

Urban Malaria Control Revisited

Urban Malaria Control Project (UMCP) was implemented between 1988 and 1996 and funded by the Japan International Cooperation Agency in Dar es Salaam and Tanga. UMCP was an ambitious program, deploying IRS every 3-6 months, selling subsidized ITNs, reducing breeding sites through environmental management, conducting weekly larviciding and use of expanded polystyrene beads in closed water collection sites. By 1996, malaria parasitaemia in school children aged 6–16 years fell markedly in the population covered; however, the project ended due to lack of sustained funding.

Launch of the National Malaria Control Program

In 1990 the Government of Tanzania (GoT) launched the National Malaria Control program (NMCP) under the Epidemiology and Disease Surveillance Section of the Ministry of Health and Social Welfare (MoHSW) by then. During this period, the NMCP began to reignite a broad health system awareness of malaria through workshops to engage Regional Primary Health Care Committees, health workers and laboratory staff. A series of revised guidelines were developed for diagnosis, treatment and referral of malaria cases and materials for information education and communications (IEC) were produced. From its inception to date NMCP in collaboration with stakeholders has implemented four Strategic plans.

The 1997–2000 National Malaria Strategy

This strategy promoted a broad suite of malaria control methods, including detection and prevention of epidemics, case management and malaria prevention in pregnancy and supporting initiatives such as behavioural change, M&E and research. The target was to achieve by 2000, a 50% reduction in case-fatality rates in hospitals, a 30% reduction in the incidence of malaria in the community, and a 30% reduction in the incidence of severe life-threatening malaria among children under five years of age. However, the plan lacked the details on how M&E metrics would be measured. The role of the NMCP remained one of providing strategic direction in the development of policies, coordination of activities and provision of technical support and capacity building at the district level, including advocacy and training of the District Management Teams (DMTs).

The launch of Roll Back Malaria (RBM) initiative in 1998 provided the Ministry of Health with an opportunity to position malaria within the ongoing Health Sector Reforms in the country. The reforms were also aligned to Millennium Development Goals (MDGs) and Tanzania's Development Vision 2025, which was launched in 1999. In 2000 the NMCP, developed a tailor-made package for malaria planning and implementation for district managers, which was rolled out in all districts.

The 2002–2007 National Malaria Strategy

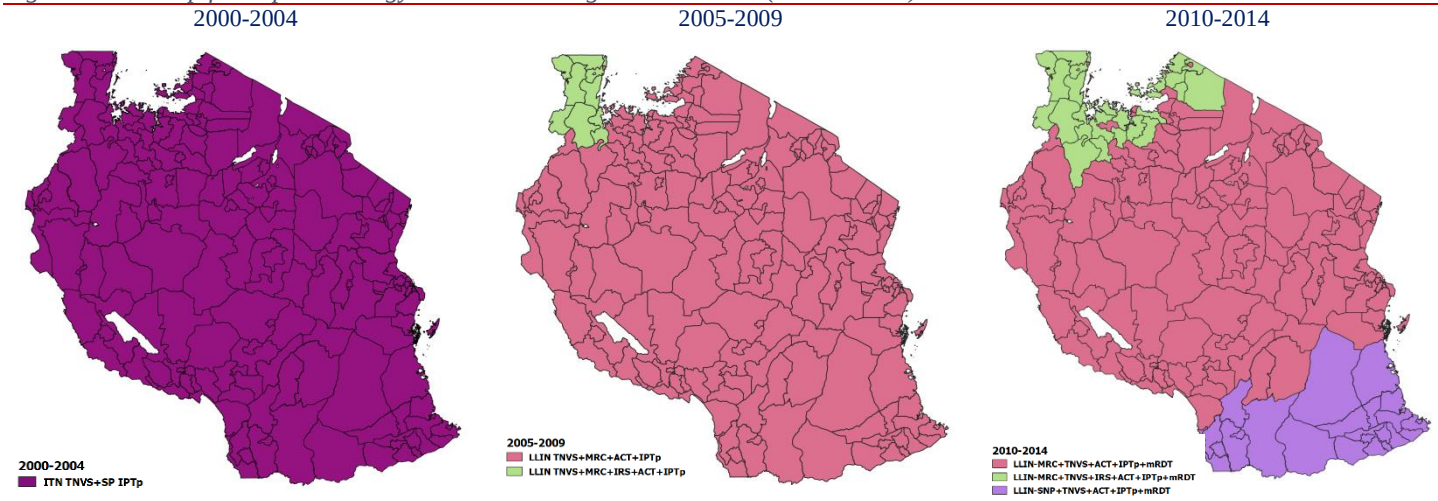
The goal of the 2002–2007 National Malaria Strategy was "to reduce mortality and morbidity due to malaria in all 20 regions of the country by 25% by 2007 and by 50% by 2010" through the delivery of four strategic approaches: (1) improved malaria case management, (2) vector control through the use of ITNs, (3) control of malaria in pregnancy and (4) malaria epidemic prevention and control. The strategy set all intervention targets at 60% by 2007. The strategy was developed in the era of renewed international commitment and investment in malaria control. Such initiatives included commitments made by African Head of States during the Abuja Summit in 2000, the Global Fund to fight AIDS, Tuberculosis and Malaria in 2002, and the U.S. Presidents Malaria Initiative in 2004. The guiding principle for the implementation of the strategic plan was "Scale Up For Impact" (SUFI) and the strategies were implemented universally with no or very limited variations in the country (see Figure 4).

The 2008–2013 National Malaria Strategy

In developing the 2008–2013 strategy, the Ministry of Health in collaboration with partners, aligned the strategy's framework to correspond with the RBM Partnership's Scale Up For Impact (SUFI), to achieve targets of universal coverage of 80% by 2010 and the MDGs by 2015. The strategy embraced a new paradigm shift towards "phased malaria elimination" for the first time in the history of malaria control in Tanzania. Two main technical areas were included in the strategy: (1) malaria diagnosis and treatment; and (2) Integrated Malaria Vector Control (IMVC) - both supported by improved M&E (including operational research and epidemic early detection and response), community-based malaria control, behavioural change initiatives and retaining a focus on decentralized support through regional and district capacity building around malaria control (NMCP, 2008).

The main changes to the strategy were the emphasis on achieving universal coverage to attain 80% for all interventions by 2013 and a much stronger and clearly defined emphasis on IMVC. IRS was re-introduced as part of vector control activities in the epidemic-prone and high-malaria endemic districts. Malaria RDTs were introduced into the public sector facilities from 2011, wide-scale distribution began in 2013 (see Figure 4).

Figure 4: Scale up for impact strategy with minimal regional variation (2000 – 2014)



ITN TNVS: insecticide treated net, Tanzania national voucher scheme, SP: sulfadoxine-pyrimethamine IPTp: Intermittent Preventive Treatment in pregnancy

LLIN: long lasting insecticide treated net, TNVS: Tanzania national voucher scheme; MRC mass replacement campaign, IRS Indoor Residual Spray, ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy

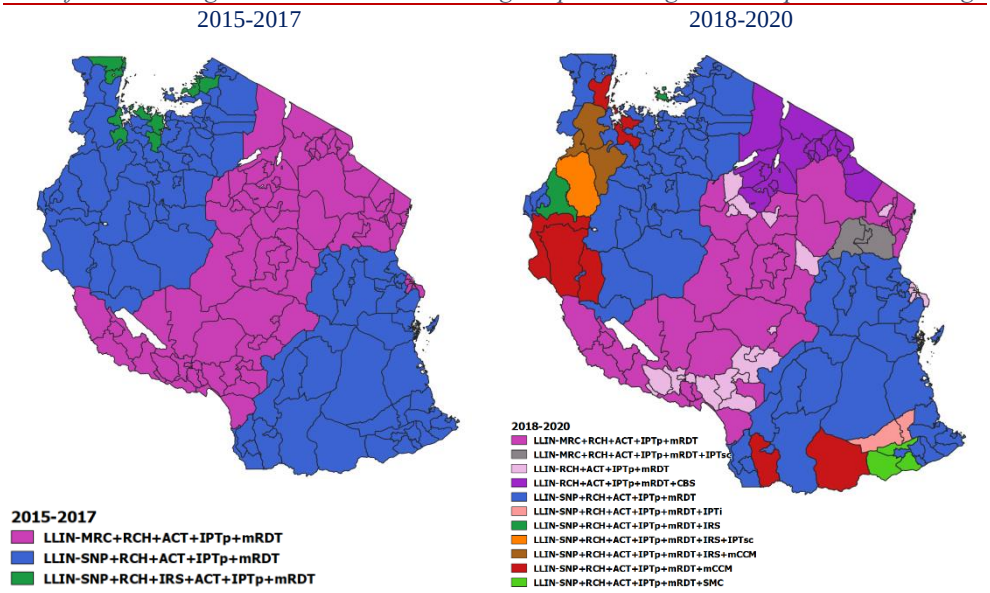
LLIN: long lasting insecticide treated net, TNVS: Tanzania national voucher scheme; MRC mass replacement campaign, ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy, mRDT: Malaria rapid diagnostic test, IRS Indoor Residual Spray; SNP: school net program

The 2015–2020 National Malaria Strategy and Supplementary Strategic Plan 2018 – 2020

The goal of the National Malaria Strategic Plan 2015–2020 was to reduce the average country malaria prevalence from 10% in 2012 to 5% in 2016 and further in 2020 to less than 1%. During mid-term review (MTR 2017) it was realized the set national target was unlikely to be achieved. The major change that happened during the MTR at mid-point Strategic Plan implementation was the re-orientation of strategic direction by developing the Supplementary Malaria Midterm Strategic Plan (SMMSP) 2018 – 2020. The main recommendation was to develop an appropriate strategic approaches that will help to achieve the set targets and eventually realize greater impact and reduce malaria to very low levels. The SMMSP stratified malaria burden according to the observed epidemiological diversity of four major epidemiological strata, and set up for implementation of intervention packages to match

with the heterogeneity. Malaria stratification, provides guidance to the transition towards elimination in phases. It is an approach that facilitates strategic adjustments to invest for impact and burden reduction in moderate to high transmission areas and disadvantaged population. Also to further decrease low transmission areas and to advance towards malaria elimination in very low transmission settings. The stratified interventions in the country produced four epidemiological classes; 'very low, 'low', 'moderate' and 'high' burden strata and one operational strata; 'urban'. Stratification maps are the outputs of classified malaria burden in different areas of the country (Figure 5).

Figure 5: from "one size fit all" to targeted intervention according to epidemiological and operational settings



LLIN: long lasting insecticide treated net, MRC mass replacement campaign, RCH: reproductive and child health; ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy, mRDT: Malaria rapid diagnostic test, IRS Indoor Residual Spray; SNP: School Net Program

LLIN: long lasting insecticide treated net, MRC mass replacement campaign, RCH: reproductive and child health; RCH: reproductive and child health; ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy, IRS Indoor Residual Spray; SNP: school net program; CBS: case based surveillance; CmCM: malaria community case management; SMC: Seasonal Malaria Chemoprevention; IPTi: Intermittent Preventive Treatment in infancy; IPTisc Intermittent Preventive Treatment in school;

Malaria research

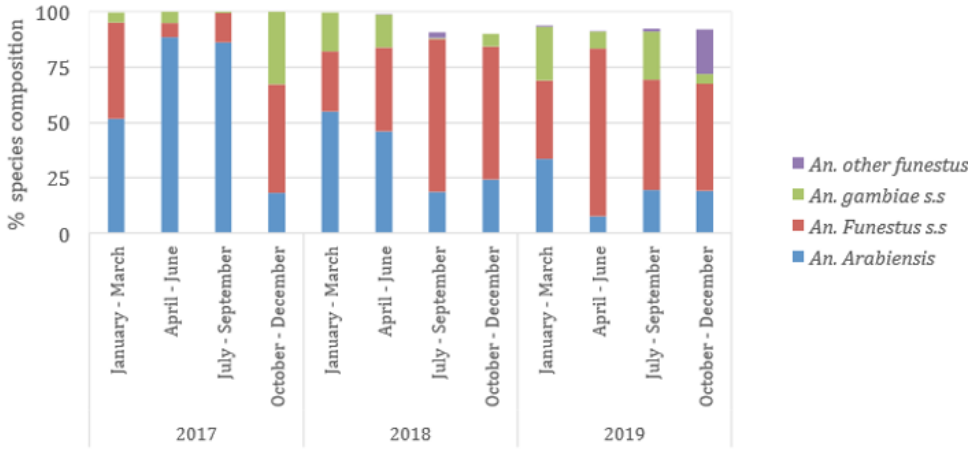
Malaria research was initiated in the Amani Biological-Agricultural Institute during the German administration in the first decade of 1900s, and continued under the Tanganyika Medical Services (TMS) during the British administration. The institute was transformed in 1949 into the East African Malaria Unit. The research centre served not only Tanganyika but also Kenya, Uganda, Zanzibar and British Somaliland, in the prevention and control of malaria and other vector-borne diseases. It became the East African Malaria Institute in 1951 and was renamed the East African Institute of Malaria and Vector Borne Diseases in 1954. At the end of British colonial rule, the institute continued to play an important role as a research centre in Tanzania. In 1977, it was renamed Amani Medical Research Centre of the National Institute for Medical Research, covering a wide range of areas in medical research. Another malaria research centre, Swiss Tropical Institute field laboratory (STIFL), was founded in Ifakara in 1956. It was renamed the Ifakara Centre (associated to NIMR) in 1991, the Ifakara Health Research and Development Centre (IHRDC) in 1996, and the Ifakara Health Institute in 2008. Other very important malaria research institutions are based at NIMR Tanga and Muheza centres, KCMC, MUHAS and CUHAS.

Malaria vectors

The major malaria vectors in most areas of Mainland Tanzania are members of the *Anopheles funestus* group *and Anopheles gambiae complex*; *Anopheles funestus* account for the majority (56.3%) followed by *Anopheles arabiensis* (24.9%) and the least is *Anopheles gambiae ss.* (18.8%). *Both An. funestus* and *An. gambiae ss* exhibit endophilic and anthropophagic behaviour and these species are highly affected by the use of indoor interventions such as IRS and LLINs. Another member of the *An. gambiae* complex, *An. arabiensis* is an opportunistic species either feeding on humans or animals and indoor or outdoor depending on factors including geographical location and blood- host availability. Due to its feeding and resting habits, *An. arabiensis* is considered less vulnerable to IRS or LLINs but more vulnerable to larval source management. *An. funestus* is associated with dry season and prefer breeding in permeant water bodies under direct sunlight while members of the *An. gambiae s.l.* breed in clean temporally water bodies exposed to direct sunlight. Data from MVS (2018), revealed a range of Entomological Inoculation Rate (EIR) for dominant malaria

vector species found in Tanzania ranging from 4.7, 2.3 and 1.8 infective bites per person per year for *An. arabiensis, An. funestus and An. gambiae ss* respectively. Other mosquito species in *An. gambiae* complex and *An. funestus* group in the country include *An. merus* and *An. rivulorum, An. parensis* and *An. leesoni* respectively. Additional, secondary malaria vectors that have been recorded in the country in the recent past are *An. pharoensis, An. ziemanni,* An. rufipes, An. coustani and An. Squamosus An. Coustani, An. wellcomei. Figure 6.

Figure 6: Population dynamic of malaria vectors in the selected 62 sentinel sites, Mainland Tanzania-2017- 2019



Current status of Insecticide Resistance in Mainland Tanzania

The dramatic scale up of pyrethroid impregnated LLINs and the re-introduction of IRS, using pyrethroid followed by carbamate (bendicarb) in 2009 and organophosphate (primiphos- methyl) in 2014, has resulted in decrease in malaria morbidity and mortality in Tanzania. However, insecticides resistance presents a major threat to future progress in sustaining the gains obtained. In Tanzania, data from insecticides resistance monitoring from 22 sentinel sites has revealed widespread resistance of *An. gambiae* ss to pyrethroid and focal resistance to bendicarb and primiphos- methyl. Monitoring of insecticides resistance provide better understanding of the levels of vector susceptibility to the existing insecticides – based intervention for malaria vector control. Two mechanisms of insecticides resistance co-exist in the country, metabolic and target site resistance (*kdr*). Both target site mutations and metabolic resistance have been observed to co-occur and widely spread around Lake Zone regions (Mwanza, Mara and Kagera). Co-occurrence of both target site mutations (*kdr*-East and *kdr*-West) has been recorded in only few sentinel sites in Lindi, Mbeya and Kagera. *Kdr*-East is the dominant target site mutation in all sentinel sites across the country particularly around Lake Zone, Western Zone (Rukwa, Katavi and Kigoma) and southern zone (Lindi and Mtwara) of the country. Metabolic resistance due to both Oxidase and Esterase has been observed around Lake, North-eastern and Southern zones of the country.

Parasite species

Plasmodium falciparum is the most common species and predominates across sub-Saharan Africa. P. vivax predominates in the subtropics and coexists with P. falciparum in Asia, the tropical Americas and the Horn of Africa. *P. ovale* is found in Africa and sporadically in South-East Asia and the western Pacific. *P. malariae* has a similar geographical distribution to P. falciparum but its distribution is patchy.

Plasmodium falciparum is responsible for 96% of malaria infections in Mainland Tanzania. The remaining being attributed to other plasmodia, mainly *P. malariae* and *P. ovale* as mono infection or mixed with *P. falciparum.* NMCP and research partners are expecting to develop a nationwide representative plasmodium species mapping in 2021.

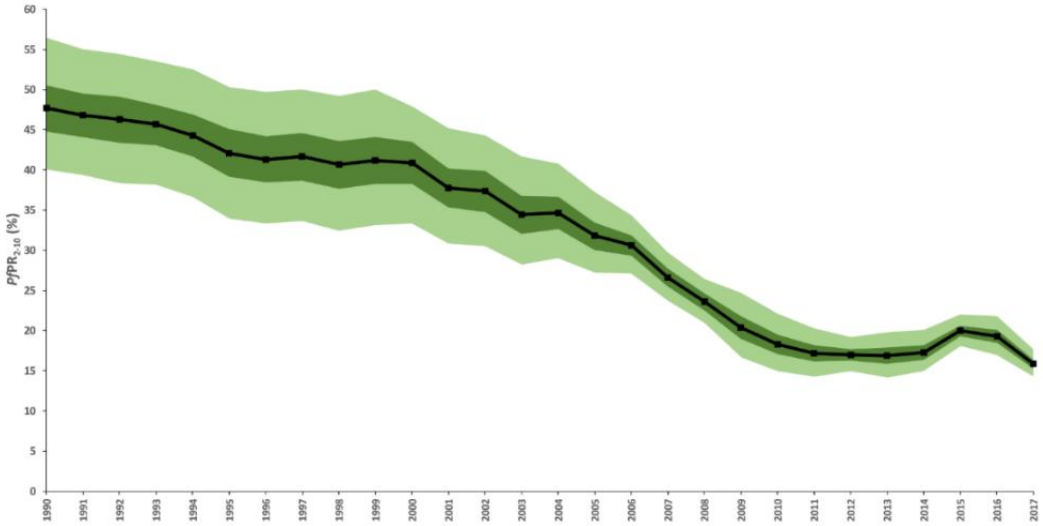
Recent observations using PCR (SMPS 2017) found *Plasmodium ovale* at extremely high prevalence in certain districts. *Plasmodium vivax*, previously unaccounted for, is also occurring in northwest Lake zone.

Malaria transmission in mainland Tanzania

Between 1990-early2000's malaria in Tanzania was largely between the meso- and hyper-endemic classes with a national average pfpr for children aged 2 to 10 years ($pfpr_{2\text{-}10}$) above 40%. Since early years of 2000s a marked reduction of parasite prevalence was recorded reaching a hypo-endemicity level in the most recent years (Figure 7). Further evidence of reduction of malaria in sentinel population is presented in Annex 1. In the period 1990-2017 the geographical distribution of malaria prevalence progressively revealed a heterogeneous distribution from very low endemicity in the central belt from the north to south to notably higher endemicity in the north-west and south east of the country (Source NMCP/KEMRI

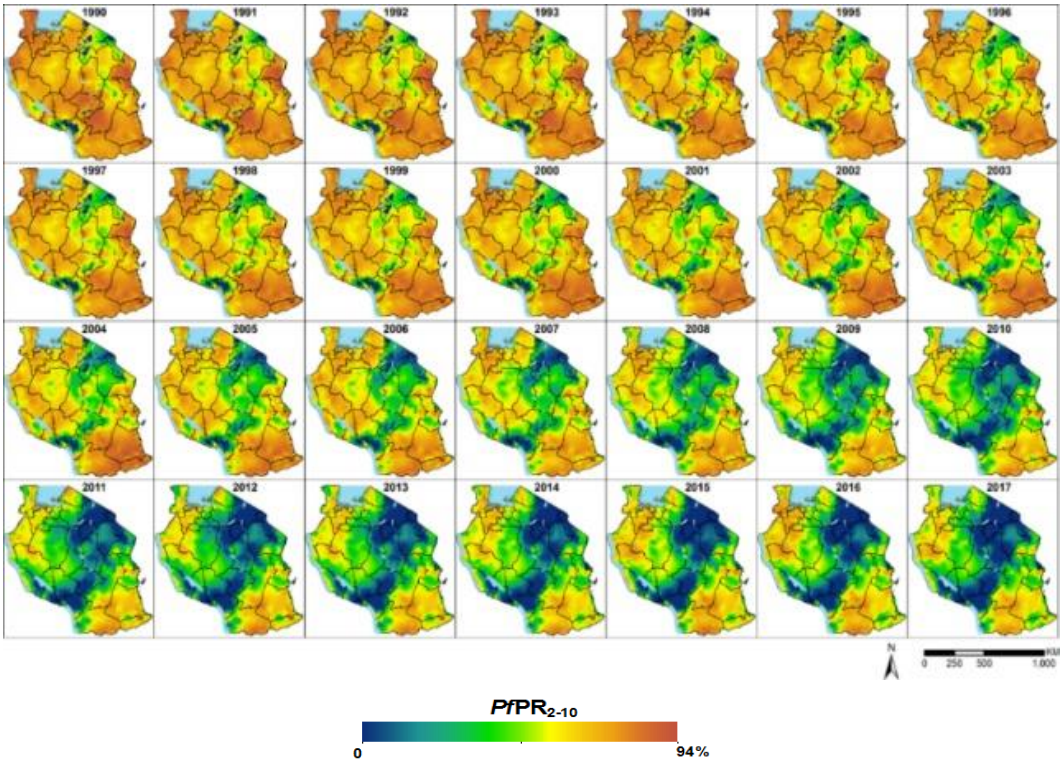
Figure 8).

Figure 7: Trends on Mean Malaria Prevalence ($pfpr_{2\text{-}10\ years}$,) in Tanzania 1990-2017



Source NMCP/KEMRI

Figure 8: Representation of geospatial trends of Mean Malaria Prevalence ($pfpr_{2\text{-}10\ years}$,) 1990-2017

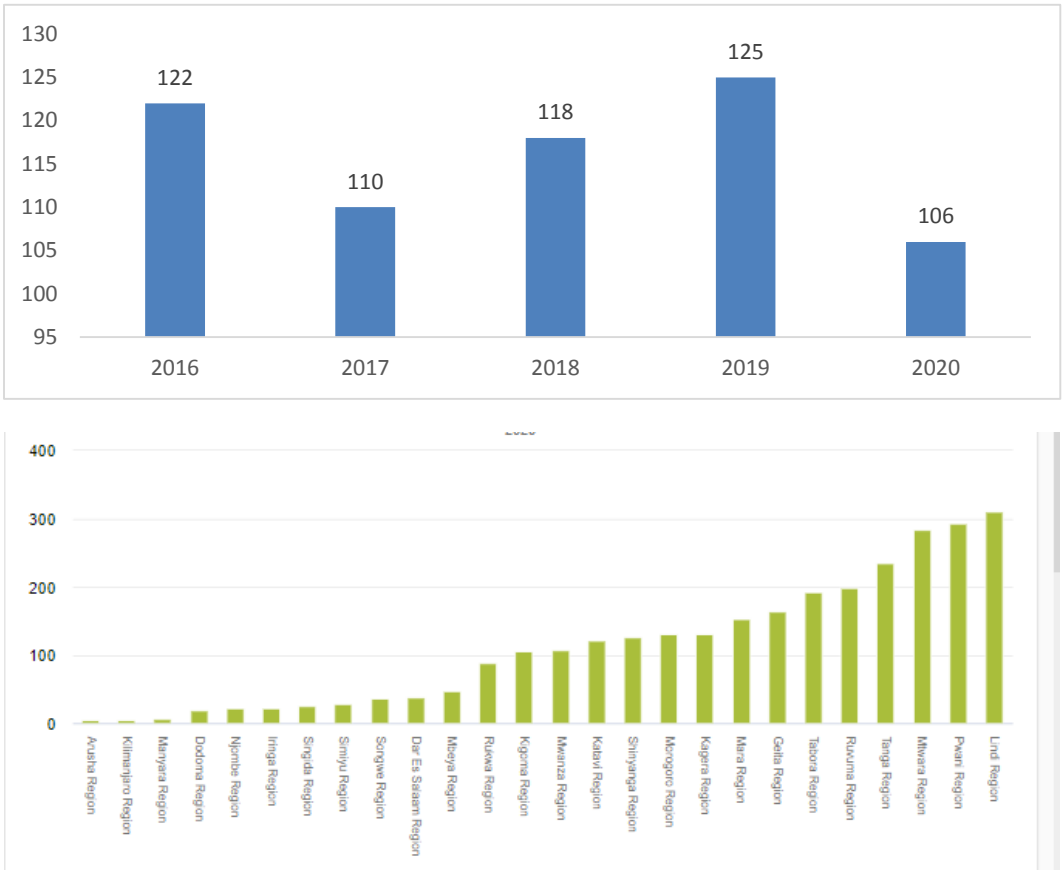


Source: NMCP/KEMRI

Malaria morbidity and mortality

Morbidity: Between 2016 and 2020 the average annual malaria morbidity recorded in health facilities has been fluctuating between 100 and 125 per 1000 population, from approximately 250-300 per 1000 in high-malaria risk regions and less than 15 per 1000 in low malaria transmission risk regions (Figure 9).

Figure 9: Malaria cases per 1000 population by year 2016-2020 (upper) and by region, 2020 (bottom)

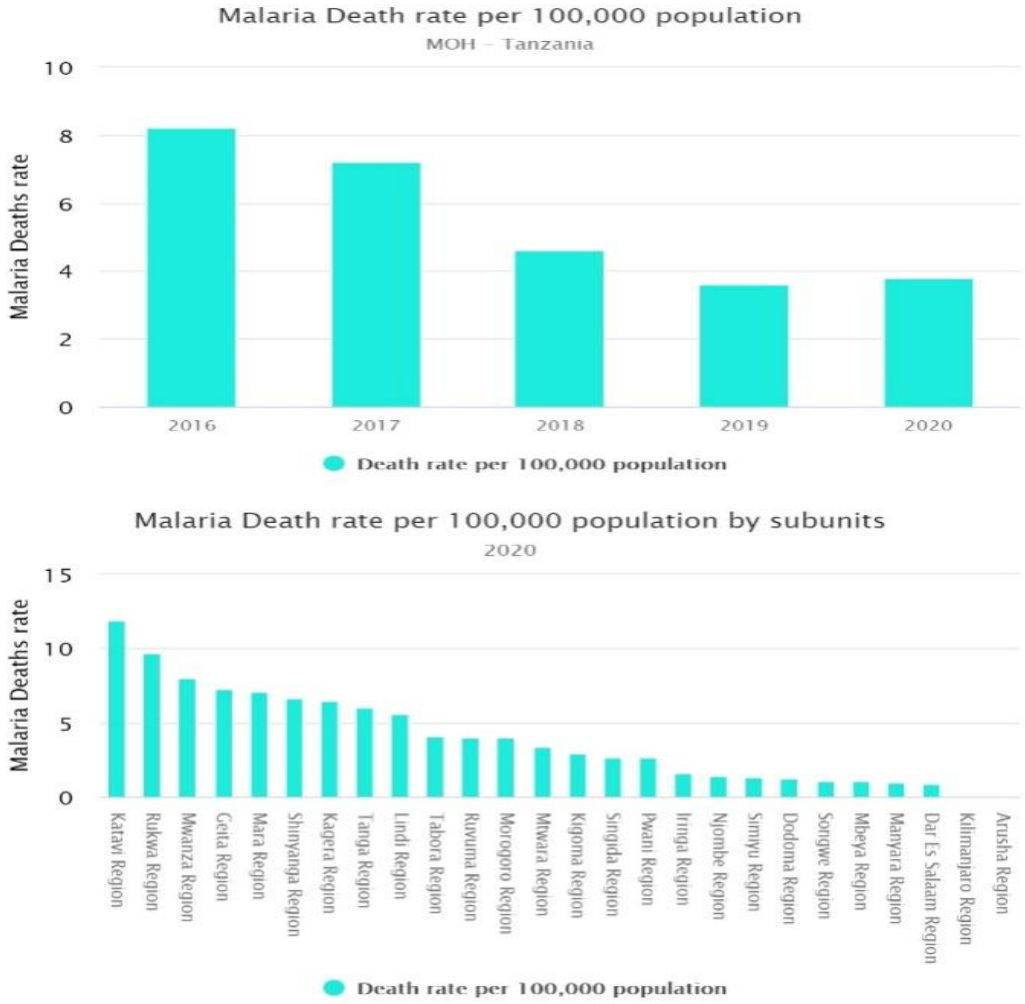


Source: DHIS2 NMCP interactive dashboard

Mortality: The three major sources of mortality data are a) population-based survey (DHS); b) Operational research; (c) Routine HMIS reporting. All findings are showing a reduction in all causes under five mortalities and in malaria related health facility-based mortality. The population-based mortality shows approximately 50% reduction in infant, child and under 5 mortalities from 1999 to 2016 (TDHS). Health facility-based indicators [11] show more than 50% reduction in mortality between 2016 and 2020 with very large variations between high and low malaria risk regions. Routine mortality indicators in DHIS2 are also showing progressive reduction on malaria deaths and its large heterogeneity (figure 10).

[11] Mboera LEG, Rumisha SF, Lyimo EP, Chiduo MG, Mangu CD, Mremi IR, et al. (2018) Cause-specific mortality patterns among hospital deaths in Tanzania, 2006-2015. PLoS ONE 13(10): e0205833. https://doi.org/10.1371/journal.pone.0205833

Figure 10: Malaria deaths rate per 100,000 population by year (upper) and by region (bottom)



Source: DHIS2 NMCP interactive dashboard

Malaria transmission risk, stratification and mapping

The World Health Organization Global Technical Strategy (GTS) for malaria 2016–2030 encourages stratifying sub-national malaria burden based on the analysis of malaria data, risk factors and the environment[12]. The recently launched High Burden High Impact (HBHI) initiative also emphasizes the use of data to shift away from a "one size fits all" to a more tailored malaria control approach in order to accelerate progress against malaria[13]. Also following a mid-term review (MTR) of the NMSP 2015-2020 in 2017, it was recognized that a more strategic allocation of limited resources was needed to ensure continued progress in the future. This together with recommendations from a consultative meeting with global and national malaria experts and in concert with the GTS 2016-2020, mainland Tanzania used a country-led data-driven approach to develop a national malaria risk stratification[14] to facilitate tailoring of interventions to the sub-national local context, based on epidemiological stratification[15].

[12] WHO. Global Technical Strategy for Malaria 2016-2030. Geneva, World Health Organization, 2015

[13] WHO, RBM Partnership to End Malaria. High burden to high impact: a targeted malaria response. Geneva, World Health Organization, 2019. Report No.: WHO/CDS/GMP/2018.25

[14] Thawer, S.G., Chacky, F., Runge, M. et al. Sub-national stratification of malaria risk in mainland Tanzania: a simplified assembly of survey and routine data. Malar J 19, 177 (2020). https://doi.org/10.1186/s12936-020-03250-4

[15] National Malaria Control Program (NMCP), Tanzania. Supplementary Midterm Malaria Strategic Plan 2018-2020. Ministry of Health, Community Development, Gender, Elderly and Children; Tanzania, 2018

Macro-stratification

Central health planning of malaria control in Tanzania considers the council as the primary unit for resource allocation and implementation of policy and operational decisions made at national level. Therefore, malaria stratification was conducted at this level.

Based on the availability, frequency and robustness of malaria data, the following malaria indicators were selected to conduct the stratification: 1) Parasite prevalence in school children from school surveys 2) fever test positivity rate (TPR), 3) annual parasite incidence (API), 4) confirmed malaria incidence and 5) malaria positivity rate in pregnant women. See Annex 2

The administrative regions and councils were assigned respectively to 4 epidemiological strata - Very low, Low, Moderate and High and 1 operational stratum – Urban (see Figure 11). The malaria transmission risk mapping, consistently demonstrating low transmission areas in a "corridor" running from the north east to the south west of Tanzania covering approximately one third of the country and its population. At the same time the high transmission areas are constantly found in the north-western lake zone and in the south-eastern coastal zone.

Micro-stratification

As the country moves towards implementing a targeted malaria control approach, a more granular stratification of malaria risk at sub-council level will become increasingly valuable in informing council health managers about their malaria situation. Micro-stratification allows for identifying areas within a council that require intensified interventions and thereby efficient resource allocation. The Tanzanian malaria risk micro-stratification considers the ward (*kata*) as the most granular administrative level. Wards are expected to become the ultimate target for further evidence-based decentralized malaria control planning and implementation in mainland Tanzania. The methodological approach is similar to that of macro-stratification. The overall composite micro-stratification is shown in Figure 12 and Table 2.

Figure 11: Mapping Malaria Transmission risk through stratification of administrative areas.

2020 Stratification regional level *2020 Stratification council level*

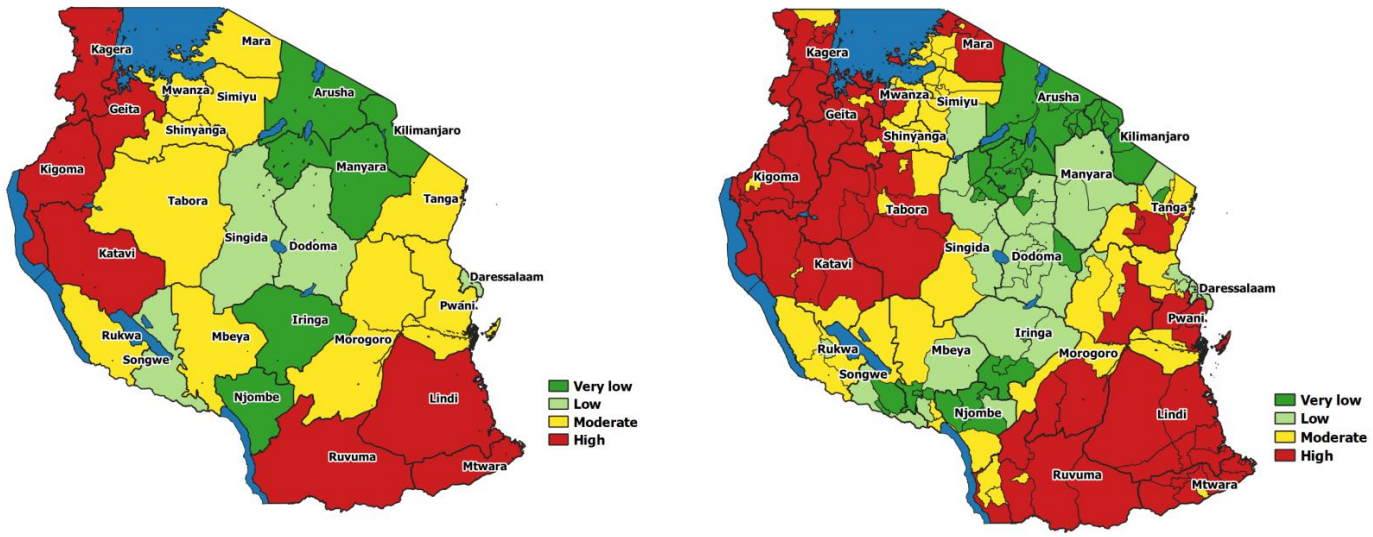


Figure 12: Micro-stratification of malaria risk in mainland Tanzania

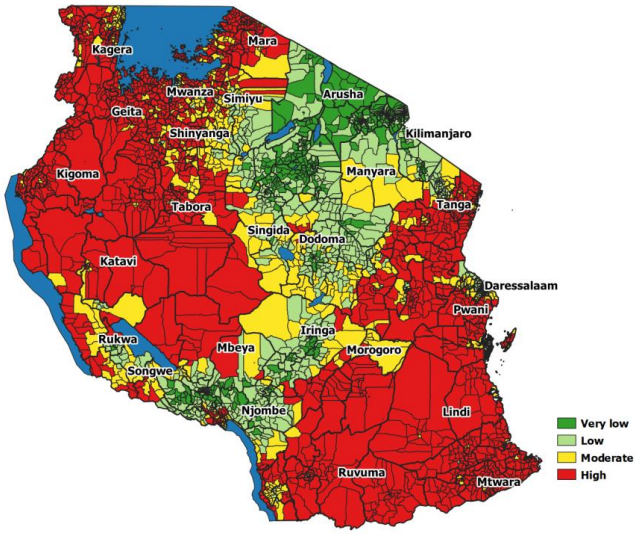


Table 2: Proportion of the population living in different strata according to level of stratification

Stratum	Number of Regions (% Population)	Number of Councils (% Population)	Number of Wards (% Population)
Very Low	**5 (14%)**	**36 (17%)**	**405 (11%)**
Low	**4 (23%)**	**32 (27%)**	**794 (31%)**
Moderate	**10 (40%)**	**52 (23%)**	**640 (18%)**
High	**7 (23%)**	**64 (33%)**	**1,472 (40%)**
Total	**26 (100%)**	**184 (100%)**	**3311 (100%)**

Chapter 4: Malaria Program Performance

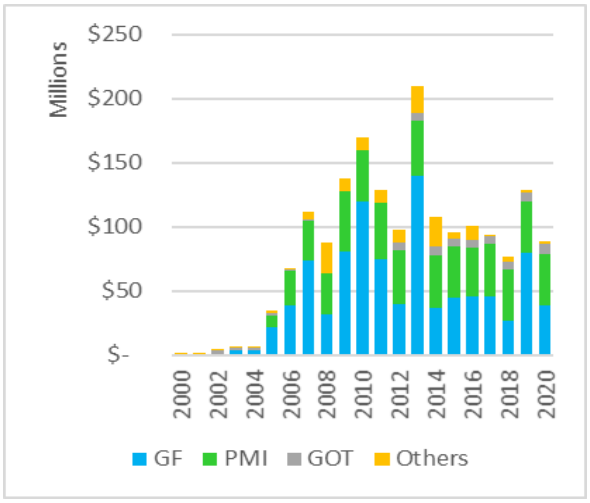
Overall progress towards NMSP 2015-2020 targets

Financing of the malaria program

Development partners are main contributors in direct financing malaria control activities including procurement of recommended preventive and curative malaria commodities. About 90% of malaria control direct budget is from two financial mechanisms: The Global Fund and the US President's Malaria Initiative (Figure 13). In the budgetary contribution, malaria vector control accounts for 50% - 60% of the annual budget while malaria case management accounts for 20%-30%, (Figure 14). *The MPR 2020 report*[16] *recommended to facilitate the development of financial sustainability plan to increase domestic financing for malaria control.*

Figure 13: Malaria financial contribution by funder

2000 – 2020 annual contributions



Aggregated contribution 2016-2020

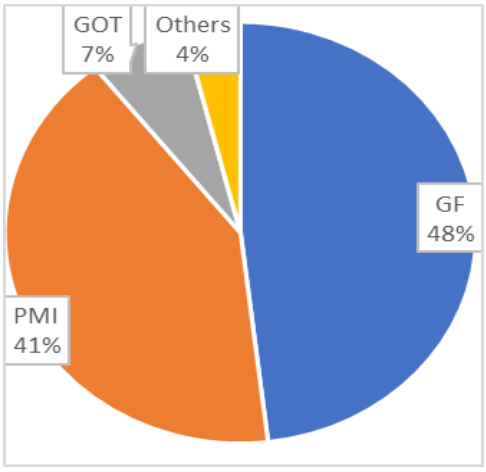
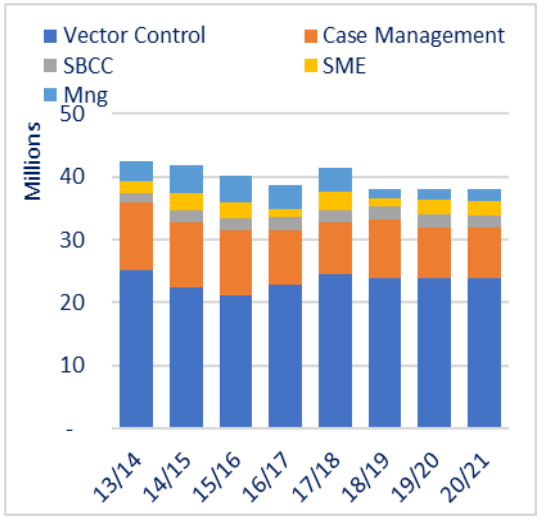
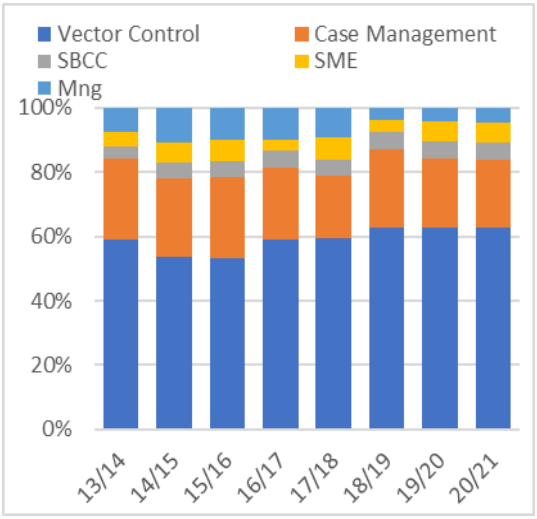


Figure 14: Budget allocation to strategic areas from 2013/14 to 2020/21 (left chart: total USD and right chart: proportion)





[16] National Malaria Control Program 2020: Malaria Program Review

Effectiveness of the health system in delivering malaria services

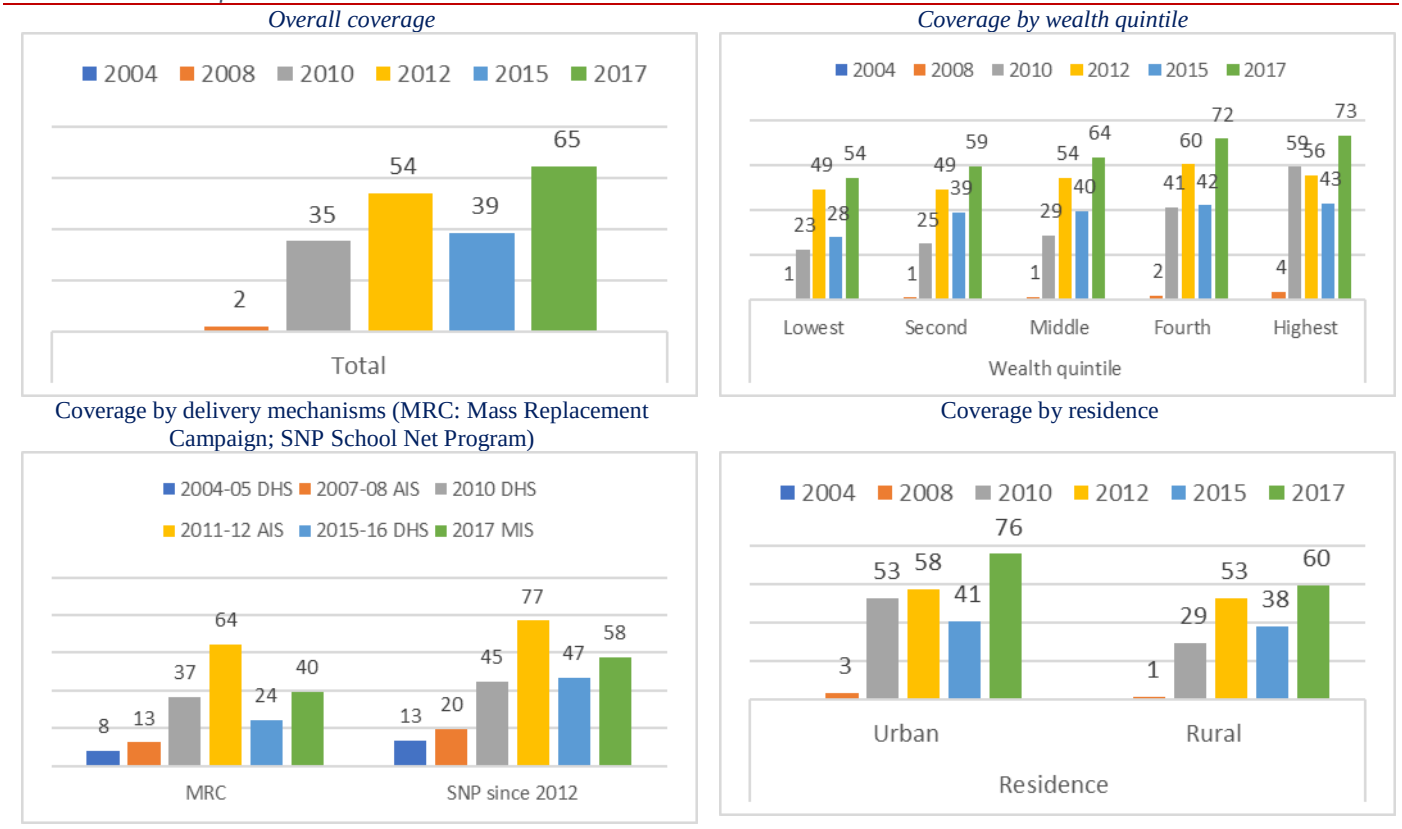
Vector control

In the assessment of 2015-2020 malaria strategic plan, MPR 2020 evaluated the implemented vector control strategies (LLIN, IRS and LSM). However, the scope for assessment of LSM component was limited only to bio-larviciding.

The assessed Strategic Plan outcome targets for Vector Control were:

- **LLINs:** *percent of the household population with access to an LLIN within their household (assuming one LLIN covers two persons).* The baseline used to assess LLINs access in NMSP 2015-2020 was 39%. The midterm progress in 2017 was 65%. The coverage was higher in more wealthy population and in urban areas. Regions implementing continuous distribution (since 2012) were performing better than regions with mass distribution campaign (MIS 2017), see Figure 15. The 80% LLIN access has not been reached despite mass campaigns and continuous distribution channels. *MPR 2020 report recommended to explore innovative multiple distribution channels to ensure national average LLIN access reach 80%*.
- **IRS:** *percent of households in the country sprayed with recommended insecticide(s) within the past 12 months*. The IRS coverage target countrywide by 2020 was 25% from the baseline coverage of 12% in 2014. The midterm progress in 2017 was 3.7% (MIS 2017).
- **Bio-Larviciding:** *Number of councils implementing larval source management according to the national integrated malaria vector control guidelines*. Information obtained from field validation in MPR 2020 on Bio-Larviciding was on procurement efforts and nothing on technical operation issues to reflect field implementation achievements and challenges. There is no technical record to show Bio-Larviciding was conducted as per national guidelines. MIS does not include Bio-Larviciding outcome indicators and there is no routine national framework and indicators for monitoring implementation of Bio-Larviciding. *MPR 2020 report recommended to develop national framework and indicators for routine monitoring of implementation of Bio-Larviciding in the councils. The report also recommended to quantify and cost Bio-Larviciding national needs guided by technical requirements of different malaria strata in relation to seasons of the year.*

Figure 15: Percentage of households' population with access to a ITNs/LLINs within their household (one net for two person) in Mainland Tanzania from 2004 – 2017.



Malaria diagnosis and treatment

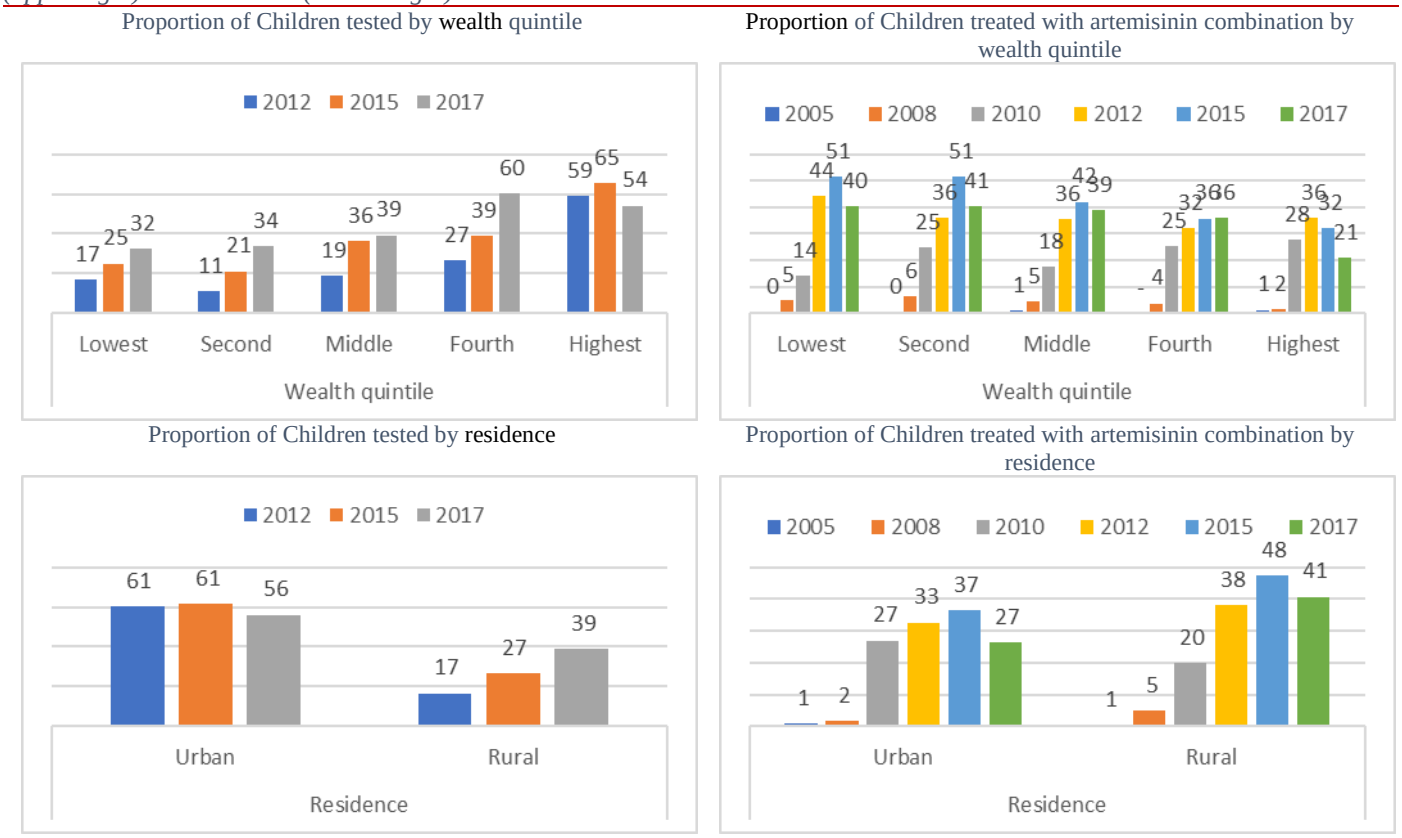
The assessed Strategic Plan outcome target for Case Management were:

- **Testing:** *Percentage of children under the age of 5 years with fever who had a malaria test the same or next day after onset of a disease*. The average testing rate in 2017 was increased to 43.1% from 35.9% in 2015 and 24.9 in 2012 (source MIS). Test

rate is lower in rural areas and low wealth quintile population, compared to the level of urban areas and higher wealth quintiles (Figure 16).

- **Treatment:** *children under age 5 with fever who were treated with recommended antimalarial the same or next day following the onset of fever*. This indicator dropped from 30% in 2015 to 25.2% in 2017 (source MIS). The average access to treatment is influenced by testing, where testing rate is high (urban settings and wealthiest quintile), use of treatment (ACTs) is low. *MPR 2020 report recommended improvement of access to malaria testing and treatment beyond health facilities to adequately reach social-economic disadvantaged community (rural & low wealth quantile). Figure 16*

Figure 16: Malaria testing by wealth quintile (upper left) and residence (bottom left); and Malaria treatment by wealth quintile (upper right) and residence (bottom right)



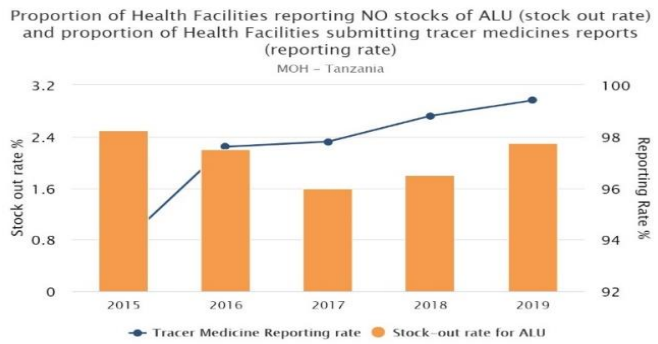
Procurement and Supply Management (PSM)

The assessed Strategic Plan outcome target for PSM were:

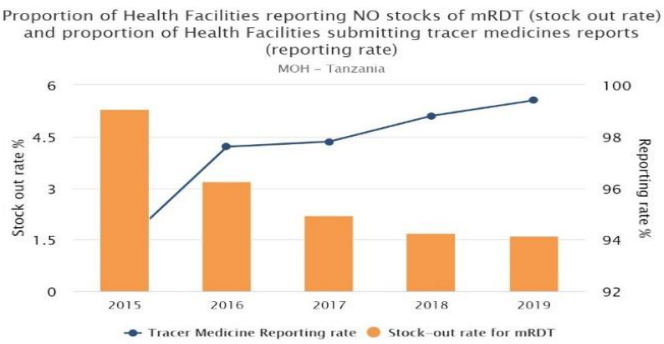
- **Stock of ACTs:** *Proportion of public healthcare facilities with no stock outs of ACTs at the end of the month*. The stock out rate of ALu decreased from 2.5% (2015) to 1.6% (2017) and rose again to 2.3% (2019), Figure 17a.
- **Stock of mRDT:** *Proportion of public healthcare facilities with no stock outs of mRDTs at the end of the month*. There was annual decline in stock out rate of mRDT from above 4.5% in 2015 to below 2% by 2019, Figure 17b.
- The source of these two outcome targets is the NMCP dash board anchored to HMIS/DHIS2. In general, the stock out rate for the two mentioned malaria commodities is below 2.5% for the period of 2019. This is probably due to proper quantification of malaria commodities at health facilities as well as effective supervision and mentorship**.** The malaria commodities reporting rate for the period of 2019 was 99.4%.
- *The recommendation on PSM is to maintain quantification cycles, reporting rate and availability of malaria commodities at all levels.*

Figure 17: Proportion of Health Facilities with stock outs (no-stock at the end of reporting month) of ALu (a) and mRDT (b)

a)



b)



Surveillance monitoring and evaluation

The assessed Strategic Plan outcome target for Surveillance Monitoring and Evaluation (SME) were:

- **Routine data:** *Proportion of health facilities among all facilities reporting OPD indicators monthly data through the HMIS*. All health facilities (100%) reported malaria OPD indicators. The target was achieved due to timely submission of the HMIS monthly summary forms and entry into the DHIS2 system. However, issues on data quality is still a challenge and some data are not obtained routinely for complete malaria indicators.
- **SME framework:** *Proportion of updated datasets with key indicators for monitoring preventive malaria services, logistics, coverage, quality of service provision, vector and parasite dynamics included in composite database and available for programmatic decision making*. It was difficult to assess updated dataset with key indicator as a measurement for strengthening of SME framework.
- **Malaria knowledge:** *Proportion of quarterly and annual malaria epidemiological bulletin developed and disseminated to malaria partners and stakeholders*. For malaria knowledge, the targeted 8 (100%) malaria epidemiological bulletins were developed and disseminated to malaria stakeholders and stakeholders.
- **Epidemic prevention:** *Proportion of malaria epidemics detected and responded within two weeks from the onset*. No malaria epidemics was detected through established threshold. Although the system was not functioning as expected, one malaria epidemic was reported at Misenyi DC and contained.
- **Surveillance system for malaria elimination:** *Proportion of councils within the "very low" transmission stratum that established appropriate surveillance system*. Establishment of surveillance system for malaria elimination was in process for 17 councils in very low malaria transmission stratum.

The major challenge in SME was non-functioning system to detect malaria epidemics. *The recommendation from MPR 2020 report was to re-organize a system for malaria epidemics detection to be functional and provide an alert in the event of an epidemic*

Advocacy, social mobilization and social and behavior change communication

The assessed Strategic Plan outcome target for advocacy, social mobilization and social & behavior change communication were

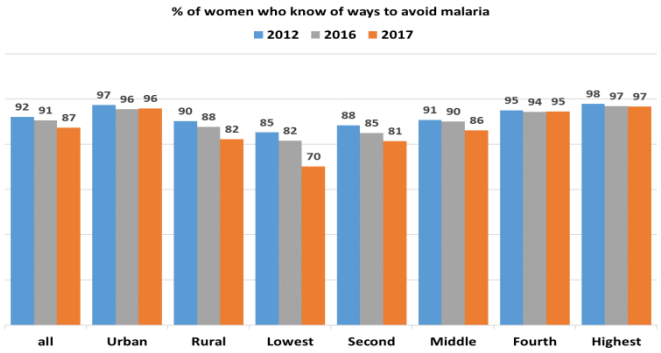
- **Knowledge on prevention:** *Proportion of population (disaggregated by sex M/F) with knowledge of measures to avoid malaria*.
- **Knowledge on test & treatment:** *Proportion of population (disaggregated by sex) with knowledge on where malaria test and treatment is obtained*.
- **Knowledge on vulnerable groups:** *Proportion of women 15-49 years who know pregnant women are at higher risk of getting malaria*.
- **Knowledge on risk of malaria:** *Percentage of women (and men) who state that malaria is the most serious health risk in the community*.
  All four knowledge based indicators obtained from MIS showed there is a trend for these indicators which shows progress since 2012 to 2017. During the implementation of the previous Malaria Strategic Plan, knowledge, awareness and attitude on malaria prevention, testing & treatment, and vulnerable groups remained high to above 89% (Figure 18) and is almost universal in both urban and rural areas. Exposure to malaria messages was also high to 84% with variations in background characteristics like rural urban and wealth where exposure to message is 80% in urban and 76% in rural, and exposure to malaria message increased with increasing wealth, from 65% in the lowest quintile to 96% in the highest quintile (MIS 2017). However, the knowledge on malaria as a serious risk was low at 57% (MIS 2017)

During MPR 2020 validation weak SBC&A sustainability of malaria promotive community based programs was noted because all of CHWs known as Community Change Agents (CCAs) were funded by partners. Another finding was; the roles and responsibilities of CCA and CHW if both present in the same geographical working area was not understood by subnational authorities. *The MPR*

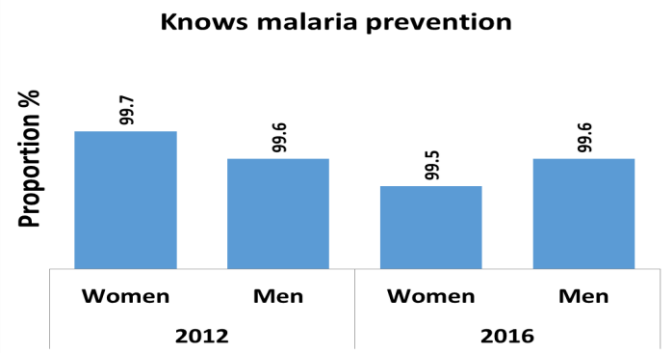
2020 recommended to develop comprehensive national wide protocol on implementation of community based malaria interventions which include resource mapping for subnational level to ensure sustainability.

Figure 18: Knowledge on malaria prevention

Proportion of women who know about malaria prevention



Proportion of men and women with knowledge on malaria prevention



Chapter 5: Malaria Strategic Plan 2021-2025

Introduction to National Malaria Strategic Plan 2021-2025

Purpose of the National Malaria Strategic Plan

The purpose of the National Malaria Strategic Plan is to provide a comprehensive technical guidance to stakeholders and development partners for the period of five (5) years (2021-2025), focusing on transitioning to malaria elimination in phases in mainland Tanzania by 2030.

The plan stratifies country malaria burden with matching package of interventions to enable strategic adjustments to invest for impact burden reduction in high transmission settings and to advance towards malaria elimination in very low transmission areas.

Process of developing the Tanzania malaria strategic plan 2021-2025

The plan was developed as back to back activity to Malaria Program Review (MPR) which evaluated the performance of the 2018-2020 SMMSP and provided recommendations. The development process involved extensive consultation process, through a series of video conferences as precaution to COVID 19 pandemic in close collaboration with Government Ministries, Departments, Organizations, colleagues and Development partners.

Guiding principles

This strategic plan is guided by the following principles; a) *Country ownership and leadership* –the plan is aligned with the national development plan, national health sector strategic plan and national planning and financial systems; b) *Inclusive and coordinated partnerships* – the NMCP is under the umbrella of MoHCDGEC and works in collaboration with several internal and external partners. There is harmonized joint action by partners in support of the national malaria strategic plan. This reduces duplication and fragmentation of efforts; c) *Accountability* – the Ministry of Finance and Planning is implementing a performance based financing mechanism. All partners are accountable for their commitments and responsibilities to their beneficiaries through this tool; d) *Evidence based and results oriented* – as a result of the recommendations of the 2020 malaria program review the new strategic plan aims to achieve the most effective and efficient use of resources as well as ensuring that the implementation of the agreed interventions will be scaled up in a well-coordinated manner; e) *Technically sound* – Allocation of interventions has been evidence-based guided by the malaria epidemiological stratification which has been done up to the sub-national level and in line with the WHO'S Global Technical Strategy; f) *Feasibility* – the NMSP has taken into consideration the relevance and acceptability of the selected interventions by the communities and assessed the capacity of the health sector to deliver the required health serves; and g) *Cost effectiveness* – the NMSP has also addressed the principle of value for money by targeting interventions based on malaria risk where the best use of resources available is earmarked for the provision of services that will lead to maximum reduction of morbidity and mortality.

Vision

Tanzania becomes a society free from malaria

Mission

Ensure all people in Tanzania have equitable access to sustainable, quality, effective, safe and affordable malaria preventive and curative services through efficient collaborative partnership and community ownership.

Goal

The national goal is to reduce the average malaria prevalence in children aged less than 5 years ($pfpr_{6\text{-}59months}$) from 7.5% in 2017 to less than 3.5% in 2025. The stratified targets are: a) **reduce malaria burden** in moderate to high risk strata, from 15% *pfpr* in 2017

to less than 7.5% *pfpr* in 2025[17]; and b) maintain and further reduce transmission in low and very low risk strata (areas targeting **elimination)** from of 1% *pfpr* in 2017 to less than 0.5% *pfpr* in 2025[18]. (see Table 3 and 4)

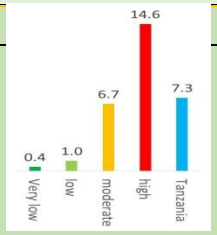
Table 3: Goal indicator and definition

Impact Indicator	Indicator definition	
	Numerator	Denominator
malaria prevalence in children aged less than 5 years ($pfpr_{6\text{-}59months}$)	Number of children aged less than 5 years positive for malaria parasites	Number of children tested

Appropriateness of the indicator: The indicator reflects the level of malaria transmission. It is monitored through national representative surveys after every 2-3 years. Seasonality and biased survey procedures might affect the results

Table 4: Goal target and malaria prevalence in children aged less than 5 years (pfpr6-59months) by strata

Indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
Malaria prevalence in children aged less than 5 years (pfpr6-59months)	7.5%	2017	MIS	5.0%	< 3.5%



Malaria risk	Baseline	Baseline Year	Source	Target 2023	Target 2025
Very Low	0.4%	2017	TDHS/ MIS	0.2%	0.0%
Low	1.0%			0.5%	0.3%
Moderate	6.7%			3.5%	1.5%
High	14.6%			7.5%	3.5%
Urban	NA	NA	NA	NA	NA

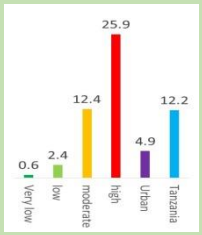
By attaining the strategy goal, the reduced transmission is expected to decrease the Annual Parasite Incidence (API) from an average of 122 per 1000 in 2019, to less than 30 per 1000 in 2025. The API by strata are formulated to a) reduce malaria burden in moderate to high risk strata, from 259 API per 1000 in 2019 to less than 60 API per 1000 in 2025 and b) maintain and further reduce transmission in low and very low risk strata (areas targeting elimination) from 24 API per 1000 in 2019 to an average of less than 6 API per 1000 in 2025. (see Table 5)

Table 5: Annual parasite incidence by strata

Impact Indicator	Indicator definition	
	Numerator	Denominator
Annual Parasite Incidence	Number of confirmed Malaria patients	Population at risk per 1000

Appropriateness of the indicator: The indicator reflects the burden of malaria disease. It is monitored annually through routine HMIS. Access to health facilities and reporting rate might affect the results.

	Indicator	Baseline	Baseline Year	Source	Target	
					2023	2025
B	Annual Parasite Incidence	122	2019	DHIS2	60	Less than 30



Malaria risk	Baseline	Baseline Year	Source	Target 2023	Target 2025
Very Low	6	2019	HMIS/ DHIS	3	1
Low	24			12	Less than 6
Moderate	124			60	30
High	259			125	Less than 60
Urban	49			25	12

[17] Reference values high risk stratum

[18] Reference values low risk stratum

Strategic objectives

The NMSP 2021-2025 has six (6) strategic components, three core and three supportive (Figure 19):

Figure 19: Core and Supportive strategies

Each component has its own **strategic objective** measured by **impact indicators (table 6)**.

Table 6: Strategic objectives and indicators

Strategy	Strategic Objective	Impact Indicator	Baseline	Year	Source	Target 2023	Target 2025
Malaria Vector Control	Reduce malaria parasites transmission by maintaining recommended evidence-based vector control interventions according to the targeted malaria risk strata	**Annual Entomological Inoculation Rate (EIR)**	2.9	2018	NIMR	1	0.1
		Very Low	0.13			**0.12**	**0.1**
		Low	0.6			**0.3**	**0.1**
		Moderate	2.9			**1**	**0.1**
		High	2.9			**1**	**0.1**
		Urban	0.13			**0.12**	**0.1**
Malaria Diagnosis Treatment and Preventive Therapies	To prevent the occurrence of mortality related to malaria infection through universal access to appropriate diagnosis and treatment and targeted provision of preventive therapies for vulnerable groups	**Malaria Mortality rate in Health facility per 100,000.**	**4 per 100,000**	**2019**	**HMIS/ DHIS2**	**3 per 100,000**	**1 per 100,000**
		Very Low	0.6			0.3	0.0
		Low	1.0			0.5	0.0
		Moderate	5.8			3	2.0
		High	5.6			3	2
		Urban	4.3			2	1
Malaria Surveillance Monitoring and Evaluation	To provide timely and reliable information on malaria and its control needed to take appropriate actions in different transmission risk and ensure resources are used in the most cost-effective manner	**Proportion of councils with very low malaria transmission risk**	**20%**	**2020**	**Malaria risk stratification**	**25%**	**35%**
		Very Low	36 (20%)			25%	35%
		Low	32 (17%)			25%	30%
		Moderate	52 (28%)			25%	25%
		High	64 (35%)			25%	10%
		Urban	NA			NA	NA
Logistic Management	Maintain timely availability of safe and quality malaria commodities and supplies at the delivery points.	**Proportion of commodities received as per supply plan**	**100%**	**2019**	**pipelines**	**100%**	**100%**

Strategy	Strategic Objective	Impact Indicator	Baseline	Year	Source	Target 2023	Target 2025
Social Behavioral change and Advocacy	To strengthen an enabling environment where individuals at risk from malaria are empowered to protect themselves and their families from malaria and seek proper and timely malaria-treatment	**Proportion of parents/caretakers with children under five years old with fever in the last two weeks for whom advice or treatment was sought**	**75%**	**2017**	**MIS**	**81%**	**85%**
Leadership, Partnership and Resource Mobilization	To strengthen efficient and effective coordination for implementation of malaria strategies through accountable partnership	**Proportion of malaria control service delivery mechanisms implemented annually**	**63%**	**2020**	**MPR**	**75%**	**90%**

Strategic Plan Outline

The **strategic objectives** illustrated above are implemented through different **strategic approaches** measured by **outcome indicators**. The strategic approaches depend on a number of **service delivery mechanisms** measured by **output indicators.** Figure 20

Figure 20: SNP structure outline

The **specific components** of the plan are described comprehensively in the following sections. A comprehensive outlook of the strategic plan with the expected **timeline** is narrated in Annex 3 while its **performance framework** is reported in Annex 4.

Malaria Vector Control Strategy

Integrated Malaria Vector Control (IMVC) Outline

Table 7: IMVC strategic approaches

	Strategic Objective
1	**Reduce malaria parasites transmission by maintaining recommended evidence-based vector control interventions according to the targeted malaria risk strata**
	Strategic Approaches
1.1	**Ensure universal access to LLINs according to malaria transmission settings**
1.2	**Consolidate and expand IRS in epidemiologically and operationally suitable areas**
1.3	**Implement appropriate, sustainable and quality Larval Source Management (Larviciding, Environmental Management and Biological control) interventions in suitable epidemiological and operational areas**
1.4	**Provide a strategic framework for coordination and continuous assessment for the implementation of evidence-based Vector control innovations**

IMVC Background

Situation: In the course of the last NMSP 2015-2020, Tanzania has been implementing two core malaria vector control interventions; universal LLINs distribution throughout the country and targeted IRS in a limited number of councils. The two interventions were supplemented by use of bio-larviciding (Bs and Bti) from 2017/2018. These interventions contributed to the observed reduction of malaria transmission in different risk strata. Since 2017, longitudinal entomological surveillance across all country malaria risk strata has been implemented to identify mosquito abundances, population dynamics, behaviors, speciation and its infectivity in 62 sentinel councils.

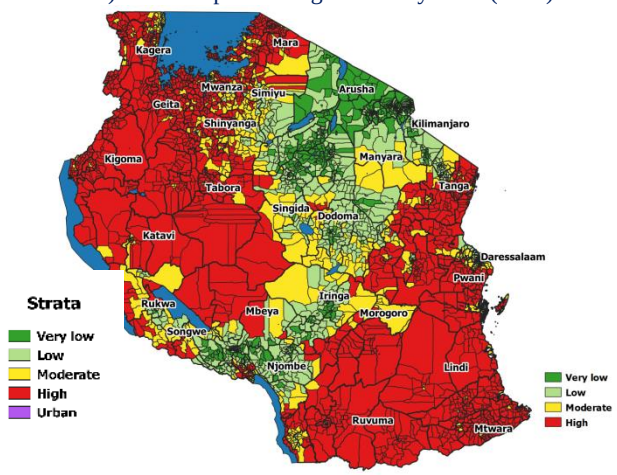
Policy guidance: To implement Integrated Malaria Vector Control (IMVC), IRS and LLINs are the core malaria vectors control interventions supplemented by LSM (biological larviciding and source reduction), upon attainment of universal coverage of the two core interventions.

Strategic direction: The IMVC approach aims to prevent human-vector contact in a cost effective manner to cover the entire population at risk of malaria in all epidemiological and ecological settings by rendering the environment unsuitable for mosquito breeding. The strategic objective and its strategic approaches are summarized in Table 7. The IMVC interventions shall be based on malaria risk stratification at the most suitable and granular level considering the local epidemiology of the disease, the population vulnerability and the ecology of the local vectors (See Figure 21, table 8 and annex 5 and 6). The integration with the control efforts of other vector borne diseases intends to maximize the benefits. The strategy intends also to promote effective multi-sectoral collaboration with fully engagement of community for successfully IMVC implementation. Special emphasis will be placed in monitoring vector dynamics, susceptibility to the insecticides in use, compliance inspections, recruitment and training of field technicians. Innovative initiatives, especially those that address the emerging threat of insecticide resistance and preserving the effectiveness of recommended malaria vector control intervention, will be considered as they become available.

Deliverables: 33,769,987 and 58,632,562 nets will be cumulatively distributed in the first phase (2021-2023) and in the entire strategic plan period respectively. A total 6,275,862 and 12,381,166 households in 61 councils are targeted to be sprayed indoor cumulatively in the first phase (2021-2023) and in the entire strategic plan period respectively. A total of 98,362 mosquitoes breeding sites in all 184 councils are targeted to be treated with 840,601 liters of bio larvicides (Bti and Bs) per year. Generally, IMVC implementation in the country will be based on malaria transmission risk analysis as depicted by Figure 21 and Table 8.

Figure 21: example of use of micro-stratification to identify suitable epidemiological (map a) operational (map b) targets for different IMVC services

a) Malaria epidemiological risk by ward (2020)



b) Targeted operational IMVC intervention by ward (2020)

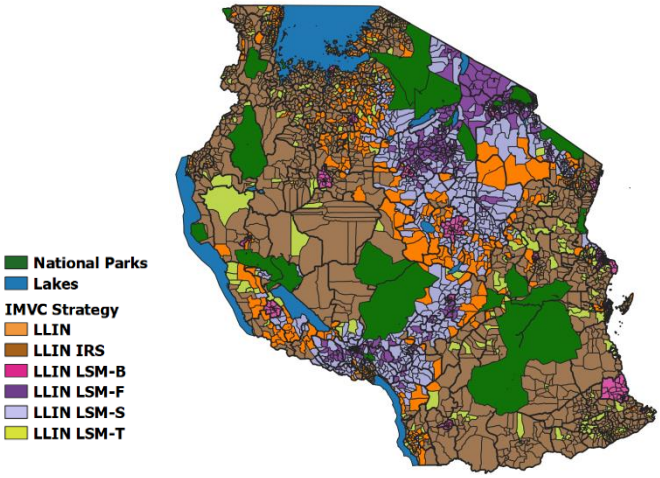


Table 8: IMVC according to malaria risk strata

Malaria risk	Description
Very Low	Vector Control Intervention (VCI) recommended in this stratum includes continued LLINs distribution through RCH and targeted mini distribution campaign in hotspots consistently demonstrating low, moderate and high transmission according to health facilities data and micro- stratification; Focal application of IRS and larviciding guided by active foci investigation under malaria case based-surveillance is highly recommended to interrupt residual transmission.
Low	VCI recommended in this stratum includes continued distribution of LLINs through SNP, RCH and targeted RC as a mitigation when coverage is expecting to drop below 40%. Larval Source Management as a supplementary intervention through community participation and engagement approach is also highly recommended in this stratum due to the expected seasonality in malaria transmission. IRS has a prominent role as response to malaria epidemics..
Moderate	The recommended VCI measures for this stratum include continuous distribution of LLINs through SNP, RCH, special economic vulnerable population groups and emergency situations (boarding institutions, specific vulnerable groups, nomads and complex emergency situation). Targeted replacement campaigns will function as risk mitigation if coverage is expected to drop below 40%. Larviciding application guided by rain seasonal pattern and malaria incidence data from the health facility is encouraged as supplementary intervention
High	VCI recommended for this stratum are LLINs distribution through SNP, RCH, special situation (Prisons, CTC, pastoralist and complex emergence situation) distribution, IRS to reduce malaria transmission, targeted replacement campaigns as a mitigation when coverage drop below 40% also in some economic social vulnerable population; Targeted application of bio-larvicides guided by rainfall pattern, local ecology and malaria incidence data from the health facility through community

	engagement. IRS to rapidly knock-down high prevalence and shift to LLINs with or without PBO as soon as possible to sustain interruption of malaria transmission or as a resistance mitigation strategy
Urban	VCI recommended in this stratum includes targeted distribution of LLINs through biological vulnerable groups, primary school, and commercial sector. Blanket larviciding in eligible and productive mosquito breeding sources through community engagement.

SA 1.1 Long Lasting Insecticide treated Nets (LLIN)

Table 9: LLIN strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
1.1	Ensure universal access to LLINs according to malaria transmission settings	Proportion of the household population with access to an LLIN within their household (assuming one LLIN for every two people in a household)	63%	2017	MIS	80	85
		Very Low	60			50	50
		Low	56.5			80	85
		Moderate	62.0			80	85
		High	63.6			80	85
		Urban	72.0			80	85
	LLIN Service Delivery Mechanisms						
1.1.1.	Implement a targeted mass replacement campaign when required according to accessibility and epidemiological risk						
1.1.2	Implement School Net Program (SNP) LLIN distribution to keep up LLIN coverage in the general population						
1.1.3	Implement LLIN distribution through RCH clinics to protect biological vulnerable groups, infants and pregnant women, and to keep up net coverage in the general population						
1.1.4	Implement LLIN alternative delivery system to special population groups and special situations						
1.1.5	Create enabling environment for LLINs availability in commercial market.						

Situation: Data from national representative survey (MIS) indicates population access to a LLINs of 63%. This figure is below the recommended national target (80%). Tanzania has had a rich and innovative history on ITN distribution, ranging from social marketing of ITN retreatment kits and nets bundled with insecticide in the early 2000s', to the world's first voucher scheme (TNVS) to provide subsidized treated nets to pregnant women and infants (**biological vulnerable groups)** while strengthening retail sales and distribution networks. The Tanzania Net Voucher Scheme (TNVS) ran from 2004-2014 (12,638,899 ITN redeemed under this scheme cumulatively before being discontinued. A new system for direct delivery of ITNs to pregnant women and infants at health facilities began roll out in 2016 to date. A total of 7,766,346 ITN have been issued till 2019 through this system. In 2009-2010 Tanzania conducted its first mass campaign (Under-Five Catch Up Campaign) where 8,753,438 nets were distributed, followed by the Universal Coverage Campaign (UCC) in 2010-2011 (16,622,251 ITN distributed), which scaled up ITN ownership and access to very high levels. A mass replacement campaign has been conducted in all regions in 2015-2016 (27,825,582 distributed) and in 10 regions in 2020 (8,728,803 distributed).

Following recommendations from a keep up strategy assessment in 2011, in 2012 the school net pilot began in three (3) regions in the Southern Zone, distributing ITNs to eligible school children with the goal of maintaining ownership and access at a steady rate. After a mass replacement campaign carried out in 2015-2016, 11 more regions joined the school net distribution program SNP as a continuous distribution mechanism since 2017. 9,551,370 ITNs distributed cumulatively under SNP between 2012 and 2019. The major financial contributions for LLIN distribution were provided by development partners, mainly GF and PMI. The major LLIN manufacturer in African region is based in Tanzania (A to Z Textile Ltd).

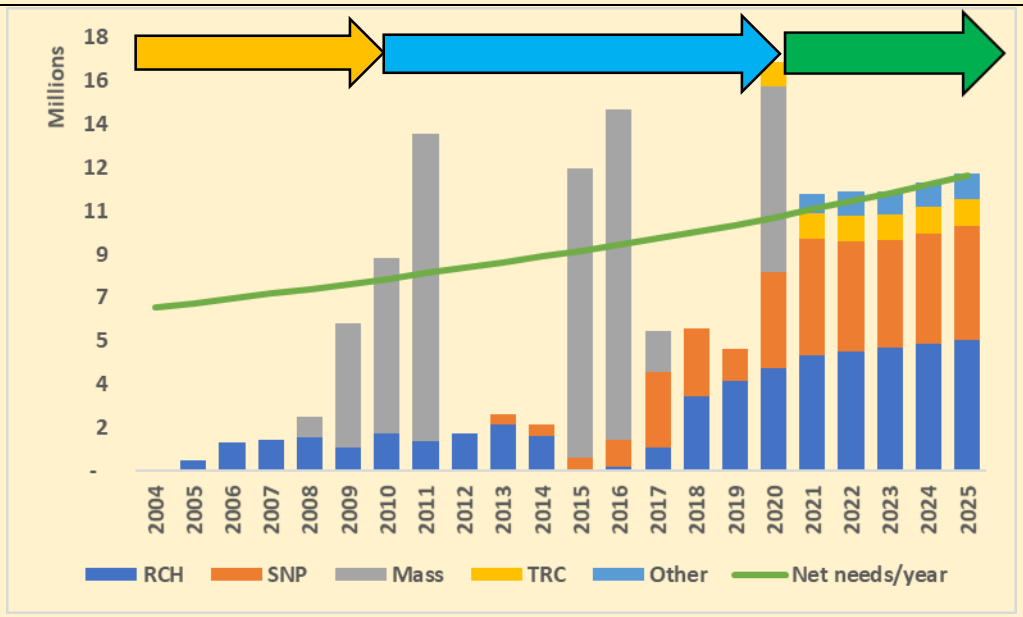
Policy guidance: In the course of the next strategic plan period, the country will shift from a combination of **keep up** plus **catch up** LLIN distribution mechanisms to complete continuous LLIN distribution mechanism.

Strategic direction: Universal access to LLINs has not been achieved in the course of the implementation of the previous national malaria control strategic plans. Therefore, alternative mechanisms are needed in addition to the previous implemented mechanisms to attain the universal access. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 9. SDM indicators and targets are described in Annex 4. The proposed distribution mechanisms will target situations and population with expected low access to net delivery mechanisms. Five main distribution mechanisms will be put in place: a) vulnerable groups attending RCH clinics (infants and pregnant women); b) school based distribution; c) special risk group distribution; d) targeted distribution according to epidemiological and operational situation; and e) commercial sector. Figure 22 is showing the number of nets distributed in the period 2004-2020 through different channels and the anticipated thresholds needed to

reach universal access based on the assumptions of one (1) net serving 1.8 people. Typically, ideally periodic mass distribution campaigns are expected to boost the access to nets and should be repeated every after 3 years. Historical evidence in Tanzania showed that it was operationally impossible to timely deliver repeated mass campaigns in the planned timeframe with consequent lack of protection for large population size. There are also evidence from MIS of rapid drop (less than 3 years) in LLIN use after large mass distribution campaigns. These are the main reasons for the country to decide an alternative distribution system based on continuously injecting LLINs in the community through a number of different channels. A full keep up strategy will start in 2021 and it is expected to deliver enough nets to keep the accessibility at the highest level. LLINs are recommended in all malaria risk strata for vulnerable groups (Table 10) while universal coverage will target all strata except the very low risk areas. Distribution of synergist piperonyl butoxide (PBO) nets with better efficacy against mosquitoes with metabolic based resistance of Pyrethroids impregnated in standard long-lasting insecticidal nets will be scaled up to all regions with evidence of high prevalence of resistance. Furthermore, next generation LLINs with alternative insecticide classes might be introduced depending on technical advice from research institutes and global institutions.

Deliverables: in the period 2021-2023 a total of 33,769,987 LLINs will be issued to Tanzanians (average 1.8 people per LLIN in eligible areas and 10% buffer) of which 21,133,882 will be PBO LLIN (63%).

Figure 22: ITN distributed and anticipated according to delivery mechanisms 2000-2025



RCH: net distributed to pregnant women and infants through RCH; SNP: nets distributed through schools, Mass: nets distributed through mass campaigns; TRC: targeted distribution according to risks; Other" alternative distribution channels

Arrows: orange only vulnerable groups, Blue: mix catch up and keep up; Green: Keep up (anticipated)

Table 10: LLINs distribution and malaria risk stratification

Malaria risk	Description
Very Low	Implement LLINs distribution to cover vulnerable groups through RCH and targeted distribution. Identified hotspots through CBS will be eligible for targeted replacement campaigns.
Low Moderate High	LLINs distribution through annual SNP and continuous RCH channels. Special vulnerable and at risk groups will be covered as well. Targeted replacement campaigns will be deployed as a mitigation when coverage drop (or it is expected to drop) below 40%. Special net distribution will also target some identified economic social vulnerable population. PBOs will be scaled up according to resistance pattern.
Urban	The preferred LLINs delivery mechanism is through targeted distribution to social economic vulnerable groups, biological vulnerable groups (pregnant women and infant children) through RCH. Promotion of commercial market of LLIN will be encouraged

SDM 1.1.1 Implement a targeted mass replacement campaign when required according to accessibility and epidemiological risk

Situation: National representative survey (MIS) indicates that average percentage of household population with access to an LLIN across the malaria transmission strata is below the country target of above 80%, ranging from 56.5% to 72%. Urban stratum has the highest LLINs access (72%) as compared to other strata. In the last ten years, the country has demonstrated to be able to implement LLIN mass distribution campaigns

through public-private partnership (2008-2016) and through public sector (2020) , with more involvement of MSD and Councils, with a total of 53,201,271 nets distributed.

Policy guidance: The current technical consensus considers implementation of targeted replacement campaign (TRC) when required by operational and epidemiological situation.

Strategic direction: There are four major operational indications for the deployment of targeted replacement campaigns: a) as a mitigation measure when access drops below 40% in the councils with keep up strategy in place; b) in pouches/hotspots of demonstrated moderate to high transmission within very low malaria risk and urban areas where LLINs distribution is indicated only to protect vulnerability; c) as a response to identified residual transmission foci in areas with established case based surveillance; and d) as response to emergency/complex situations. A strategic buffer LLIN stock should be maintained to respond to the above situations.

Deliverables: in the period 2021-2025 a total of 5,330,233 LLINs will be issued through TRC. Among them, 3,069,999 will be issued in the phase one 2021-2023. Based on the current insecticide resistance profile and to mitigate the insurgence of resistance, PBO LLINs will be at least 63% of the total net distributed through this channel.

Output Indicator: Number of LLINs distributed through targeted replacement campaigns (cumulative).

Malaria risk stratification:

Very Low	LLINs TRC is part of the response to identified transmission hot spots within this stratum
Low	Implement TRC as a catch up and mitigation if indicated and guided by evidence of low nets coverage.
Moderate	
High	
Urban	TRC is indicated in urban and suburban hotspots with demonstrated transmission

SDM 1.1.2 Implement school net program (SNP) LLINs distribution to keep up LLINs coverage in the general population

Situation: In 2020, LLINs distribution through schools has been implemented in 14 regions with high malaria prevalence. SNP has been established in three regions in the south of the country in 2012. In these regions no MRC has been conducted since then. Other 11 regions introduced SNP in 2017 after the implementation of a MRC in 2015-2016. A total of 9,551,370 nets were distributed cumulatively through SNP from 2012 to 2019. Population access to LLINs in regions implementing SNP was above the average of the regions implementing repeated MRC. Regions implementing SNP do not experience the rapid drop in coverage observed after implementing MRC.

Policy guidance: The current technical consensus considers the implementation of annual distribution of LLINs through primary school pupils, as part of the LLINs keep up strategy, in all councils except those in very low malaria risk.

Strategic direction: Implement school LLINs distribution, together with other keep up mechanisms, to ensure that the entire population has access to LLINs. Pupils are used as a vehicle to take the LLINs to the households. This approach is easily implemented and more sustainable compared to large community based net distribution campaigns. School net distribution might be associated to other malaria and health interventions in the schools such as: NTD drug administration, antimalarial targeted administration, malaria parasitological surveys, and information, education and communication packages.

Deliverables: In the period 2021-2025 a total of 22,767,993 LLIN will be issued through SNP. Among them, 13,507,721 will be issued in the phase one 2021-2023. Based on the current insecticide resistance profile and to mitigate the insurgence of resistance, PBO LLINs will be 64% of the total.net distributed through this channel.

Output Indicator: Number of LLINs distributed through Schools (cumulative).

Malaria Risk Stratification

Very Low	SNP not recommended
Low	SNP recommended to be implemented annually in order to maintain the national target of nets access at least 80% to the population. Pupils are used as vehicle to deliver LLINs to the entire community.
Moderate	
High	
Urban	SNP implemented according to epidemiological strata

SDM 1.1.3 Implement LLINs distribution through RCH to target biological vulnerable groups, infants and pregnant women, and to keep up net coverage in the general population

Situation: Direct LLINs distribution through RCH clinics started in 2016 and is currently operational in all regions of mainland Tanzania targeting pregnant women during their first ANC visit and infant when receiving the first measles rubella vaccine. Data from DHIS2 malaria interactive dashboard (2019) indicate that LLINs are distributed to 87.6% of pregnant women attending the clinic and 78.3% of infants immunized for Measles Rubella. A total of 3,644,135 nets were distributed through RCH clinics in 2019 (7,766,346 nets cumulatively since 2016).

Policy guidance: This service delivery mechanism intends primarily to protect the biological most vulnerable groups (pregnant and infants). The secondary objective is to keep up the coverage of LLINs among the general population. This delivery mechanism is sustainable and uses the existing health care system.

Strategic direction: Continued distribution of LLINs to biologically vulnerable groups, pregnant and infant in the first ANC visit and infants when receiving first measles rubella vaccine.

Deliverables: in the period 2021-2025 a total of 24,893,636 LLINs will be issued through RCH clinics to infants and pregnant women. Among them, 14,463,513 will be issued in the phase one 2021-2023. Based on the current insecticide resistance profile and to mitigate the insurgence of resistance, PBO LLINs will be 61% of the total.

Output indicators: Proportion of infants provided with LLINs during MR1 vaccine & proportion of pregnant women provided with LLINs during first ANC visit.

Malaria Risk Stratification	
Very Low	In this stratum LLINs distribution to cover all (100%) the biological vulnerable groups (pregnant women and infant children)
Low Moderate High	Both standard and PBOs to regions with metabolic insecticides resistance nets to be distributed to cover all (100%) the biological vulnerable groups and to contribute to keep up LLINs access to above 80%. The distribution is done routinely to beneficiaries within the health facilities
Urban	According to respective epidemiological strata

SDM 1.1.4 LLIN alternative delivery system to special population groups and special situation

Situation: Tanzania has never implemented net distribution targeting hard to reach groups/communities and marginalized and disadvantaged segment of the population. This possibly affected the achievement of universal LLIN access. Furthermore, the 2017 MIS is showing a less equitable access to LLINs across urban vs rural settings and wealth quintiles. See Annex 5 for further indication on targeted groups and vulnerability.

Policy guidance: This novel service delivery mechanism needs clear guidelines that will be developed in the first year of the NMSP implementation.

Strategic directions: A first set of special groups have been identified: defense camps, prisons, selected occupational workforce, under five children admitted with severe malaria or severe anemia, people living with HIV, elderly above 60 years who are economic vulnerable, refugee camps, mobile/nomadic population, socio-economic vulnerable neighborhood/suburbs, hospitals, boarding schools and orphanage centers. High level of community sensitization and participation is needed to implement this mechanism for identification of underserved risk groups and to promote sustainability and acceptance of the program and promote net use.

Deliverables: In the period 2021-2025 5,640,699 LLINs will be issued through this channel. Among them, 2,728,754 will be issued in the phase one 2021-2023.

Malaria risk stratification	
Very Low Low Moderate High Urban	In all strata alternative nets distribution mechanisms will complement the other distribution channels according to the identified marginalized or disadvantaged population.

SDM 1.1.5 Create enabling environment for LLINs availability in commercial market.

Situation: Commercial sector plays an important role in LLINs access and ownership since the earliest days of bed nets, and comprises a vital component of the current strategy, filling the remaining gaps within households and meeting consumer preferences for particular LLINs. In 2014, an assessment of the potentiality of the commercial market for LLINs distribution indicated that at least 1.2-1.5 million untreated nets were being sold annually in Tanzania, and that there was demand for mosquito nets from the commercial sector even within 12 months post-mass distribution campaigns. Furthermore, the assessment observed that the knowledge of the market players (distributors, retailers, and consumers) regarding qualities and specifications of LLINs was quite low. In mid-2016, a discrete choice trial indicated that individuals are willing to pay more for desired attributes such as insecticide, shape and size. The same trial indicated that the demand for ITNs in the commercial market was not lower in rural areas, primarily due to larger household size and the need for additional nets. The net demand was also similar across the wealth quintiles. A 2016 marketing survey demonstrated that non-treated nets were highly competitive compared to industrial treated nets due to the lower price.

Rationale: LLINs delivery through commercial sector expects to benefit from presence of a vibrant private sector from manufacturers, wholesalers, and retail outlets. These actors are potential to improve access to nets not only in urbanized areas but also in hard to reach remote areas (>50km from nearest market) areas.

Policy guidance: Currently there is no policy directive or regulatory framework to enforce private sector to sell industrial treated LLINs.

Strategic directions: Innovative strategy needs to be sought to advocate and engage private sector in selling LLINs to the community. Identify local distributors willing to sell LLINs, establish a platform for dialogue to encourage local distributors, community distribution points to sell accompanied by community sensitization and engagement.

Deliverables: Policy and guidelines in place to regulate and encourage private sector selling LLINs. Net choices in terms of preferences in colors, texture and shape might be addressed in this distribution channel.

Output Indicator: Policy and guidelines in place to attract private sector selling LLINs.

Malaria risk Stratification

Very Low Low Moderate High	In this strata commercial markets nets distribution is potential to fill the gap left by public health targeted campaign, RCH and SNP distribution. This is expected to cover mostly people living in townships and other communities with LLINs preference (e.g. size, color, texture and shape).
Urban	Commercial sector is very potential to cover the needs in large urban areas due to vibrant private sector and the population ability to pay.

SA 1.2 Indoor Residual Spray

Table 11: IRS strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
1.2	Consolidate and expand IRS in epidemiologically and operationally suitable areas	Percent of house structures in the country sprayed with recommended insecticide(s) during the past 12 months	3%	2019	NMCP composite database	23%	23%
		Very Low Low Moderate	NA			TBD	TBD
		High	9%			77%	76%
		Urban	NA			TBD	TBD
	IRS Service Delivery Mechanisms						
1.2.1	Create an enabling environment to plan, implement and conduct quality IRS through community engagement including guidelines, training packages, monitoring system, environmental compliance and pesticide management plan.						
1.2.2	Build capacity of council (CHMT) and private sector to plan, manage, implement, and evaluate IRS.						
1.2.3	Application of targeted IRS through community participation and engagement in the high malaria risk councils with resilient malaria transmission as malaria burden reduction and insecticide mitigation tool.						
1.2.4	Application of focal IRS as a response to residual malaria transmission in the very low malaria risk councils targeting elimination.						

Situation: Indoor residual sprays (IRS) was re-introduced in Tanzania in 2007 covering one council, Muleba in Kagera region to prevent/reduce malaria epidemics. Later was scaled up to cover all councils in the rest of Kagera region and in other 4 regions in the lake zone (2008/12). IRS reached a maximum coverage of about twenty councils and 6,917,682 structures sprayed and four classes of insecticides have been used; Carbamate (8%), Organophosphates (40%), Pyrethroids (50%) and Neonicotinoids (2%) (NMCP database 2019). Currently IRS is implemented in 6 district councils contributing for a national coverage of only 3% of all households. The entire financial support of IRS, since its re-introduction, has been covered by development partners (PMI).

Rationale: IRS is appropriate where a) the majority of vector population feeds and rest inside houses, b) local vector is susceptible to the insecticides used, c) malaria transmission pattern allows that the population can be protected by one round of IRS per year, d) majority of structures are suitable for spraying; and e) high population density to avoid high operational costs.

Policy guidance: Updated National Integrated Malaria Vector Control guidelines are needed to include appropriate, innovative and sustainable IRS implementation modalities according to the current epidemiological and operational situation. Well addressed SOP are also needed to incorporate community based IRS schemes.

Strategic direction: The indications to implement IRS as a strategy for both disease burden reduction and elimination. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 11. SDM indicators and targets are described in Annex 4. The followings are the conditions where IRS is indicated: a) tool for insecticides resistance management and mitigation, b) disease burden reduction in areas with resilient high malaria transmission; c) response to foci investigation to break residual transmission in very low malaria risk councils targeting elimination; and d) preempt malaria peaks in unstable transmission areas and e) response to an incumbent outbreak. In all areas eligible for IRS should consider the cost effectiveness and the possible additional benefits especially if there is high access and use of LLIN, especially PBO for insecticide

resistance mitigation. The rural areas of 61 high malaria risk councils are eligible for additional alternative IRS schemes, targeting, eventually, a maximum of 3,234,560 sprayable structures. Additional needs in areas with low and very low transmission for focal IRS application to break transmission need to be assessed (Table 12).

To scale up IRS there is urgent need to establish a decentralized community based mechanisms with major emphasis on direct community engagement for infrastructure and human resources development. CHMTs need to be capacitated to perform accurate planning, capacity building, logistic support, providing quality assurance and environmental compliance.

Deliverables: 15,051,273 (26%) Tanzanians will be protected by implementing community based IRS schemes.

Table 12: IRS implementation and malaria risk stratification

Malaria risk	Approach according to risk
Very Low	Focal IRS is the recommended vector control initiative for response to foci investigation in order to interrupt residual malaria transmission
Low	IRS is recommended to be used as a tool to response to malaria epidemics as indicated by MEEDSs, taken into consideration all logistics are in place for that matter. IRS is also indicated for interrupting transmission in very unstable areas.
Moderate	Not recommended except if there is evidence of high resilient transmission at sub district level according to micro stratification.
High	Targeted IRS has high priority especially in resilient areas and among rural population.
Urban	Not recommended for entomological and operational reasons.

SDM 1.2.1: Create an enabling environment to plan, implement and conduct quality IRS by using community engagement including guidelines, training packages, monitoring system, environmental compliance, pesticide management plan

Situation: IRS is currently implemented with development partners support through an implementing contractor with centralized planning, financial and implementation arrangements, monitoring and evaluation, compliance with environment requirements. LGA health staffs and community involvement are required during micro-planning and implementation.

Rationale: Adequate capacity to plan, monitor with updated guidelines, and standard operating procedures, training packages, pesticides management plan and environment compliance is essential in order to implement quality targeted and focal IRS for both malaria burden reduction and elimination modalities.

Policy guidance: To promote and cover core integrated vector interventions by using appropriate IRS and LLINs supplemented by LSM according to epidemiological and operational settings.

Strategic directions: To scale up quality IRS implementation in order to cover a) targeted areas of the 61 eligible councils with high malaria risk and evidence of transmission resilience through a **decentralized community based** mechanisms and b) focal IRS as response to either identified residual transmission in very low malaria risk areas or incumbent outbreaks through a **council based expert mechanism** intervention unit. NMCP needs to update and customize the guidelines, training packages to address both approaches. NMCP and PO-RALG need to be capacitated to perform appropriate macro planning, infrastructure establishment, logistic support, provision of quality assurance, and environmental compliance.

Deliverables: a comprehensive framework will be set up to support implementation of quality community based IRS.

Output Indicator: Number of councils planned using updated guidelines, SOPs, training packages, proper monitoring and environmental compliance during quality IRS implementation. See also Performance Framework.

SDM 1.2.2: Build capacity of Council (CHMT), implementing partners and private sector to plan, manage, implement, and evaluate IRS

Situation: The councils in the lake and west zones (Kigoma, Mara, Geita, Mwanza and Kagera) involved in the recent IRS implementation got some technical capacity to perform IRS operations. This capacity is lacking in the remaining councils expected to perform targeted or focal IRS.

Policy guidance: This capacity building process will involve a broad partnership of players from local government, civil society and private sector. Guidelines and standard operating procedures will be updated to provide enough capacity to IRS implementing councils on quality IRS application according to the appropriate modality.

Strategic directions: The major focus will be to build implementation capacity at the council's level. The capacity building plan will target council staff to enable them to plan, manage, implement, monitor, and evaluate IRS interventions in the respective councils using decentralized community or council based Implementation. Building capacity for implementation of community based IRS will significantly reduce the costs and accelerate scaling up of IRS to cover the targeted areas.

Deliverables: a) All high malaria risk councils (61 on 2020) will be able to guide the implementation of community based quality IRS operations; and b) All councils in very low malaria risk stratum (36 on 2020) will set up a district based unit to perform focal IRS as response in identified residual transmission foci.

Output Indicator: Proportion of eligible councils with capacity to plan, manage, implement and evaluate IRS.

SDM 1.2.3: Application of targeted IRS through community participation and engagement in the high malaria risk councils with resilient malaria transmission as malaria burden reduction and insecticide mitigation tool

Situation and Rationale: The current IRS model adopted in the country is highly centralized with an implementing partner providing commodities quantification, procurement, planning, and direct implementation. The implementing partners is also responsible for monitoring, environmental compliance, safety and quality assurance. Such scheme is highly effective but requires large inputs in term of financial and human resources.

Policy guidance: shift from centralized to decentralized community based implementation.

Strategic approaches: an innovative IRS scheme will be introduced by using full community engagement. Targeted villages will be supported to set up small IRS operation units by using available own human resources (e.g. CORPs) and will be capacitated to manage insecticides and equipment to perform quality and safe IRS operations. Continuous follow up from dedicated skilled council health staff will maintain environmental compliance and adequate quality of spray.

Deliverables: cumulatively 6,275,862 and 12,381,166 house structures will be sprayed in the periods 2021-2023 and 2021-2025 respectively.

Output Indicator: Proportion of house structures sprayed through community participation and engagement.

SDM 1.2.4: Application of focal IRS as a response to residual malaria transmission in the very low malaria risk councils targeting malaria elimination

Situation and Rationale: an expanding proportion of the country is currently observing a very low incidence of malaria cases. Preliminary observations provided after the establishment malaria case based surveillance (mCBS), demonstrate that the majority of malaria cases in these areas are imported. Yet, there is evidence of focalized local residual transmission. Alongside the implementation of mCBS, focal IRS will be introduced as part of the transmission foci response.

Policy guidance: malaria case based surveillance protocol (2020) is expected to provide the framework for focal response by using IRS. Technical guidelines and SOP will be adapted to include this innovative IRS implementation modality.

Strategic direction: an innovative IRS scheme will be introduced by using very well established council based IRS unit that will be mobilized in case of incumbent epidemics or to respond to focalized response.

Deliverables: Cumulatively between 100,000 and 150,000 house structures will be sprayed in the periods 2021-2023.

Output Indicator: Proportion of house structures sprayed as focal IRS response.

SA 1.3 Larval Source Management (LSM)

Table 13: LSM strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
1.3	Implement appropriate, sustainable and quality Larval Source Management (larviciding, environmental management and biological control) interventions in suitable epidemiological and operational areas	Proportion of larval density reduced in sentinel councils implementing biolarviciding	NA	2019	NMCP composite database	50%	75%
		Very Low	NA			60%	85%
		Low	NA			60%	85%
		Moderate	NA			30%	40%
		High	NA			30%	40%
		Urban	NA			75%	95%
	LSM Service Delivery Mechanisms						
1.3.1	Create an enabling environment to plan, implement quality LSM in targeted areas by using community engagement (guidelines, training packages, monitoring system, environmental compliance, biolarviciding management plan).						
1.3.2	Build capacity of Council (CHMT) and private sector to plan, manage, implement, and evaluate LSM						
1.3.3	Application of appropriate, sustainable and quality bio-larvicides according to guidelines and standard operating procedures						
1.3.4	Create partnership to ensure that environmental related elements of LSM are part of community based, councils and private sector LSM plans						

Situation: In Tanzania, Larval Source Management (LSM), specifically by using bio larvicides, is one of the malaria interventions that attracts attention at all levels. The Government currently supports its implementation in all 184 councils within the 26 regions. The identified operational challenges include: a) inadequate capacity at all levels to implement and monitor biolarviciding application, and b) inadequate financial resources allocated. For the period 2018 -2020 a total amount of 328,360 liters of bio-larvicides were procured and distributed to all 184 councils. The country has the capacity of producing the entire calculated needs of bio-larviciding through a state owned factory (Tanzania Biotech Products Limited, Kibaha).

Rationale: Control of mosquitoes at aquatic stage intends primarily to reduce mosquito larvae density and, consequently, adult mosquitoes and, if applied in the most efficient way, it is expected to contribute in the reduction of malaria transmission intensity in the community.

Policy guidance: To implement LSM concurrently with the IRS and LLINs in suitable epidemiological and ecological settings to contribute in the reduction of the disease burden in the communities.

Strategic direction: LSM is highly prioritized in the country. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 13. SDM indicators and targets are described in Annex 4. LSM through the use of biolarviciding shall be implemented using different approaches in all malaria epidemiological and operational strata (urban, very low, low, moderate and high risk (Table 14), through community engagement except in very low transmission in response to foci investigation, where a more centralized council based approach is advocated as a response to residual transmission foci. Data from the health facilities (proxy indicators of epidemiological malaria risk and transmission intensity) and rainfall pattern (proxy indicator of intensity of transmission) shall guide the implementation of bio-larviciding in the specific epidemiological settings.

Deliverables: A total of 98,362 breeding sites shall be identified, mapped and, eventually treated with biolarviciding. A total of 15,948,221 (27%) Tanzanians will be protected by implementing LSM intervention in additional to IRS and LLINs.

Table 14: LSM implementation and malaria risk stratification

Malaria risk	Description
Very Low	**Focal Larviciding**. Biolarviciding, alongside with IRS, is the recommended vector control initiative for response to identified foci for interruption of residual malaria transmission.
Low	**Seasonal Larviciding**. Due to the limited amount of breeding sites, once localized, malaria transmission should be efficiently attacked by biolarviciding application. LSM is expected to play a very important role in decreasing transmission in this epi stratum.
Moderate High	**Targeted Larviciding**. Emphasis to be put in targeted LSM in suitable ecological limited areas (urban, mixed wards) where breeding sites are few and fixed (before rainy season), and easily findable (close to human dwellings). Other limited ecological suitable areas in rural settings will be also targeted. Bi and unimodal rainfall should be considered in planning and conducting LSM activities
Urban	**Blanket Larviciding**. LSM is very ideal in this operational stratum and should be universally applied

SDM 1.3.1 Create an enabling environment to plan, implement quality LSM in targeted areas by using community engagement (guidelines, training packages, monitoring system, environmental compliance, biolarviciding management plan).

Situation: the current IMVC guidelines and LSM standard operating procedures (SOPs) are lacking detailed operational indication for effective bio-larviciding implementation including an adequate planning and monitoring framework for LSM adaptation to epidemiological and operational stratification.

Policy guidance: LSM guidelines and SOP need to be reviewed to meet the current implementation needs.

Strategic direction: Implementation guidelines and SOPs to be used to effectively guide implementation of quality LSM based on epidemiological strata implemented through community participation and engagement for sustainability.

Deliverables: Guidelines, standard operating procedures and M&E framework developed to guide implementation of quality LSM through community based and/or council based approaches.

Output Indicator: Guidelines, standard operating procedures and M&E framework in place to support implementation of quality LSM based on specific epidemiological strata.

SDM 1.3.2: Build capacity of Council (CHMT) and private sector to plan, manage, implement, and evaluate LSM

Situation: LSM has been introduced in Dar es Salaam since mid-2000s. All 5 municipal councils of the region have adequate capacity to perform LSM operation in the respective territory. The remaining councils have quite low experience and limited capacity to perform adequate LSM operations. The currently LSM standard operating procedures and IMVC guidelines were distributed to all 184 councils and 26 regions.

Furthermore, about 124 vector control officers from 62 councils were trained on the skills for LSM implementation. The remaining 122 councils do not have adequate knowledge and skills for bio-larviciding implementation.

Policy guidance: PO-RALG, in collaboration with NMCP, coordinates the implementation by conducting advocacy, sensitization and providing technical guidance to all 184 councils to implement quality LSM.

Strategic direction: The capacity building will target council staffs to plan, manage, implement, monitor, and evaluate appropriate LSM interventions in the respective councils according to operational and epidemiological needs. This process will involve a broad partnership of players from local government, civil society and private sector.

Deliverables: A total of 184 councils and 26 regions will be capacitated to implement LSM according to the guidelines and standard operating procedures.

Output Indicator: Number of councils capacitated to implement quality LSM and number of guidelines and SOPs distributed to the councils by 2025.

SDM 1.3.3: Application of appropriate, sustainable and quality bio-larvicides according to guidelines and standard operating procedures

Situation: Bio larviciding operations are currently implemented in all councils with major operational challenges (e.g. lack of appropriate funding and limited technical capacity).

Policy guidance: A clear supportive environment will be in place to provide evidence-based guidance and indications for the quality implementation of effective LSM according to epidemiological and operational level.

Strategic direction: LSM will be implemented in all malaria risks strata through different application approaches. Breeding sites will be mapped in all malaria risk strata.

Deliverables: A total of 98,362 productive breeding sites are expected to be mapped and sprayed for an average of 2 to 4 application cycles per year according to rainfall pattern.

Output Indicator: See Performance Framework.

Malaria risk	Stratification
Very Low	The identified productive breeding sites in the classified residual transmission foci will be treated with bio larviciding to interrupt residual malaria transmission. The process will be intensively followed up by dedicated competent council and/or health facilities based staff.
Low	Productive breeding sites identified before the rain season will be treated with bio larviciding to mitigate or prevent the malaria transmission peak after the rainfall. Additional application at the end of wet season will contribute in reduction of cases.
Moderate High	Application of appropriate, sustainable and quality bio-larvicides in identified and mapped productive breeding sites in targeted areas with epidemiological and operational indications.
Urban	Application of appropriate, sustainable and quality blanket bio-larvicides in all city and municipal councils

SDM 1.3.4: Create partnership to ensure that environmental related elements of LSM are part of community based, councils and private sector LSM plans

Situation: The current approaches used to implement environmental management for vector control is extremely operationally and financial demanding. The city, municipal and district council authorities consider it expensive to undertake due to its top down approach. Infrastructure and civil works projects together with other development projects are significantly contributing to man-made vector breeding sites.

Rationale: Implementation of comprehensive LSM is a cross cutting issues that include environmental modification, manipulations, and improved human habitations. Therefore, it requires involvement of a number of stakeholders through a multi-sectoral platform to address prevention or mitigation of vector propagation to reduce man-vector contacts.

Policy guidance: The Public Health Act (2009) requires the owner to keep premises free from mosquito breeding sites and destruction of mosquito larvae, while the Environment Management Act 2004, requires that prior of the initiation of development project (road construction, mining, irrigation schemes and other construction activities) to conduct an Environment Impact Assessment (EIA) to address the possibility to induce human suffering related to project implementation.

Therefore, the National Environmental Management Council (NEMC), should effectively enforce the available regulations to make sure that, all economic development project subject to EIA, fulfils the requirement for vector control. Furthermore, the Public Health Act (2007) should

also be enforced to ensure individuals adhere to the regulations to make their domestic surrounding environment free from mosquitoes breeding.

Strategic direction: a) Implementation of LSM should fulfil the requirement of the Public Health Act and Environmental Management Act; b) Councils are required to develop multi-sectoral LSM action plan; and c) To develop community – based environmental management action plan to guide for implementation of environmental activities that make up an integrated vector management approach.

Deliverables: A multi-sectoral LSM action plan will be set up to guide the implementation of environmental LS management at appropriate level according to epidemiological and operational settings through engagement of a) communities; b) town municipal and city councils; c) large infrastructure development projects; and d) private sector.

Output Indicator: A multi-sectoral LSM action plan developed.

SA 1.4 Vector control cross sectional activities including Insecticide Resistance Management

Table 15: Insecticide Resistance Monitoring & Management Plan (IRM&MP) strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
1.4	Provide a strategic framework for coordination and continuous assessment for the implementation of evidence-based Vector control innovations	Number of new innovative evidence-based vector control tool introduced and adopted for malaria vector in Tanzania	2	2019	NMCP	2	5
	IRM&M Service Delivery Mechanisms						
1.4.1	Encourage partners to research and develop evidence for novel vector control tools for scale up in the country.						
1.4.2	Implementation of Insecticide Resistance Management plan						

Situation; Core malaria vector control interventions (IRS/LLINs) are facing a major challenge due to the insurgence of insecticides resistance. There is enough evidence that pyrethroid resistance has spread across the country, while focal resistance to other insecticide classes (Carbamate, Organophosphate) is emerging. Currently two insecticide resistance management initiatives are implemented: a) Deployment of PBOs LLIN in areas with evidence of metabolic resistance to pyrethroid (5 regions in 2020; Kagera, Mara, Geita, Mwanza, Kigoma); and b) Rotation of organophosphate and neonicotinoid (including combination of insecticide classes) for indoor residual spray (a total of six councils in 2020/21 season; Bukombe, Biharamulo, Ukerewe, Kakonko, Kasulu and Kibondo District Councils).

Rationale: There is a limited choice of insecticides in the market for insecticides resistance management. Pyrethroid (including PBO) is the only available choice for nets treatment. In order to address this challenge, new vector control innovative tools will be adopted as they emerge/come up.

Policy guidance: a) In IRS operations, rotation of available insecticides classes every 2 years b) Scale up of PBO primarily as management of demonstrated metabolic resistance and later on as mitigation measure to delay pyrethroid resistance; and c) Introduction of innovative alternative molecules with demonstrated efficacy and safety, when available.

Strategic directions: NMCP need to continue working with different stakeholders (research institutions, regulatory bodies, and other development partners), to continue monitoring and managing insecticides resistance. Also, NMCP need to continue promoting new evidence based innovative vector control tools, for effective vector control intervention. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 15. SDM indicators and targets are described in Annex 4.

Deliverables: The plan for insecticide resistance mitigation and its management adhered upon. Innovative vector control initiatives, next generation insecticides and insecticide treated materials introduced under evidence based modality.

SDM 1.4.1 Encourage partners to research and develop evidence for novel vector control tools for scale up in the country.

Situation: see above.

Rationale: To work with research institutions to encourage developing of new vector control tools for insecticide resistance management a) To curb residual transmission in areas targeting elimination; b) To control outdoor transmission and c) Increase scope and coverage of vector control initiatives.

Policy guidance: Promoting full coverage of integrated vector control core interventions (IRS and LLINs), supplemented by Larval source management (LSM) while encouraging the development of evidence based innovative vector control tools.

Strategic direction: Development of partnership to provide strong evidence for innovative tools.

Deliverables: New vector control tools developed and, eventually, introduced and scaled up.

Output Indicators: Number of innovative vector control tools piloted in the country (cumulative).

SDM 1.4.2: Implementation of Insecticide Resistance Management plan

Situation; Currently there is ongoing insecticides resistance monitoring for all classes of insecticides used for IRS and impregnated nets in 22 sentinel districts in order to observe the performance of insecticides and updating the country insecticides resistance profile. Insecticides rotation is implemented in IRS operation areas as guided by the current Insecticides resistance monitoring and management plan (IRM&MP 2016).

Rationale: According to the current insecticide resistance profile, there is an urgent need of rational use of available tools to mitigate the effect of wide-spread insecticides resistance that might jeopardize vector control interventions.

Policy guidance: Implementation of the Insecticides Resistance Monitoring and Management Plan (IRM&MP).

Strategic direction: IRM&M plan shall be revised to accommodate new insecticide molecules as they emerge.

Deliverables: updated IRM&M plan available.

Output Indicator: Number of insecticides molecules with different mode of action used for IRS/LLIN per year.

Malaria Diagnosis, Treatment and Preventive Therapies Strategy

Malaria Diagnosis, Treatment and Preventive Therapies (MDT&PT) Outline

Table 16: MDT&PT strategic approaches

	Strategic Objective
2	**To prevent the occurrence of mortality related to malaria infection through universal access to appropriate diagnosis and treatment and targeted provision of preventive therapies for vulnerable groups**
	Strategic Approaches
2.1	**Provide universal access to appropriate quality and timely malaria diagnosis to all eligible (symptomatic and asymptomatic) people according to the guidelines**
2.2	**Provide universal access to appropriate, quality and timely treatment to all people with malaria.**
2.3	**Provide appropriate and effective services to reduce the risk of malaria infection and its complications among populations biologically and socioeconomic vulnerable to malaria.**
2.4	**Deploy appropriate malaria case management and preventive therapies interventions in suitable epidemiological and operational areas, in the event of emergency situations, and in peculiar population groups to reduce the risk of severe morbidity and mortality**

MDT&PT Background

Situation: The coverage for access to malaria diagnosis, treatment and preventive treatments is 43%, 35% and 56% respectively (MIS 2017). The findings, though dated, are largely below the set strategic targets of 80% and above. Malaria diagnostic services are mainly offered by 6,990 publics, 359 faith based organization and about 872 private operational health facilities while malaria treatment services are provided by the same operational facilities and by over 8,000 pharmaceutical outlets. Preventive therapies for pregnant women are delivered in over 7,000 RCH clinics with ante natal care services. In 2018 the country introduced the original Malaria Services and Data Quality Improvement (MSDQI). MSDQI is a comprehensive system for assessment of health facilities readiness to deliver standard malaria care, staff adequate performances, adherence to guidelines, consistency, completeness and timeliness of data management and client's satisfaction. The assessment is followed by the identification of gaps and the development of a quality improvement plan. All service delivery sections (OPD, IPD, Laboratory, Pharmacy, Store and RCH clinic) are assessed and respective plans are agreed upon.

Rationale: The primary objective of case management is to prevent severe morbidity and mortality. Appropriate management of suspected malaria cases is based on provision of quality diagnostic and therapeutic services. Additionally, the use of chemo preventive- therapies for vulnerable groups is expected to increase the effectiveness of clinical services by reducing parasite load and disease complications among targeted population.

Policy guidance: The National Guidelines for Malaria Diagnosis, Treatment and Preventive Therapies (2020 NGMDT&PT) aim to prevent the occurrence of mortality related to malaria infection through the provision of standards for appropriate early diagnosis,

and prompt treatment in all transmission settings. Furthermore, it widens the scope for provision of preventive treatment targeting risk groups.

Strategic direction: With the current malaria case management service delivery, mainly depending on operational healthcare facilities, it is unlikely to achieve universal access to appropriate malaria diagnosis, treatment and, if indicated, preventive therapies. The strategic directions for the next NMSP period will emphasize the improvement of quality of services in the existing points of care and will try to expand the services beyond the operational facilities in order to increase the access to essential malaria case management services. The strategic objective and its strategic approaches are summarized in Table 16. Malaria risk stratification is providing specific interventions according to transmission level and strategic target (Table 17).

Deliverables: at least 85% of the people infected with malaria parasites will receive appropriate diagnosis and treatment and at least 85% of vulnerable groups will be protected through preventive therapies.

Table 17: MDT&PT according to malaria risk strata

Malaria risk	Description
Very Low	Improved malaria case management in very low malaria risk areas should target nearly 100% of case detection and appropriate treatment to interrupt residual transmission and avoid resurgence.
Low	This stratum is at very high risk of malaria transmission instability. Early epidemic detection should be established and appropriate case management should provide the appropriate immediate response to outbreaks.
Moderate	Quality of malaria case management services should be the priority in this stratum and eventually expansion of services beyond the operational facilities.
High	Emphasis on reaching at least 85% of the population with appropriate case management services in high malaria risk areas needs to establish community based services and to introduce more preventive therapies for vulnerable population
Urban	In this stratum, improved case management needs to consider the quality of private, especially non premium, services

SA 2.1 Malaria Diagnosis

Table 18: Malaria diagnosis strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
2.1	Provide universal access to appropriate quality and timely malaria diagnosis to all eligible (symptomatic and asymptomatic) people according to the guidelines	% of U5 children with fever who had a malaria test the same or next day after onset of symptoms	43%	2017	MIS	75%	85%
		Very Low	33%			70%	85%
		Low	15%			70%	85%
		Moderate	46%			70%	85%
		High	52%			70%	85%
		Urban	69%			75%	95%
	Malaria Diagnosis Service delivery mechanisms						
2.1.1.	Provide high-standard, accessible, affordable, equitable, and quality-assured malaria testing services for people seeking treatment in the public health sector.						
2.1.2	Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to people seeking treatment in the private sector						
2.1.3	Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to patients seeking treatment fever managements beyond the operational health facilities						
2.1.4	Provide quality-assured and quality control in all malaria testing services						
2.1.5	Introduce evidence-based, innovative diagnostic tools/system for malaria detection and differential diagnosis of other pathogens causing febrile illnesses						

Situation: less than half of eligible population that need malaria test is accessing malaria diagnostic services when they are needed (43%, 2017 MIS). Malaria diagnosis is offered by nearly all public and private operational health services at all levels of healthcare service delivery.

Policy guidance: The NGMDT&PT provides the standard requirements for the provision of appropriate, quality and timely malaria diagnosis at different levels of health care delivery system.

Strategic directions: The focus of the current strategy is to achieve and maintain high coverage of timely parasitological diagnosis of malaria in both public and private points of care (The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 18, SDM indicators and targets are described in Annex 4). The principles for this strategy are: a) Adequate sensitive and specific malaria test methods are available; b) Providers skilled in malaria testing are in place; and c) Malaria testing services are of high quality. Behavior change communication (SBC) plays an important role in encouraging patients to seek for a confirmatory diagnostic test before treatment. It is essential that all healthcare providers adhere to the test indications and their results. Additional malaria testing points should be established beyond operational health facilities (e.g. ADDO, CBS & CmCM) to increase access of testing especially in areas of the country with low accessibility to operational health services as specified in the MDT&PT (2020) guidelines. Some specific diagnostic indications will address malaria risk stratification according to transmission level and strategic target (Table 19).

Deliverables: Improved and increased malaria testing will keep the Annual Blood Examination Rate (ABER) consistently over 50% throughout the implementation of the NMSP 2021-2025 in all epidemiological and operational strata.

Table 19: malaria diagnosis implementation and malaria risk stratification

Malaria risk	Description
Very Low	Testing rate in very low and low malaria transmission risk strata is considerably lower compared to other risk strata. This might be due to the false confidence among health care workers that detection of malaria parasite is a rare event. Increasing the testing rate is needed to optimize passive detection. Active case detection is also advocated in these strata to detect infected asymptomatic people that are potential to maintain the residual transmission.
Low	
Moderate	The strategy needs consistent efforts to increase access to malaria testing and treatment by using innovative and large scale approaches such as mRDT in ADDO and treatment at the community level by using CmCM approach. The Tanzanian malaria modeling demonstrates that case management should target a coverage of at least 85% of malaria cases with appropriate management, including testing, in order to provide optimal case management effectiveness and to decrease transmission
High	
Urban	The major provider of malaria testing in urban areas is the private sector where there is evidence of poor adherence to standard testing guidelines. Quality control and quality assurance is highly needed

SDM 2.1.1: Provide high-standard, accessible, affordable, equitable, and quality-assured malaria testing services for people seeking treatment in the public health sector.

Situation: The testing rate at facility level reached the targeted level of 51% (HMIS-2019) for testing all people attending OPD services, although with areas with lower malaria risk consistently performing below average.

Policy guidance: NGMDT&PT provides the framework for providing quality malaria diagnostic services in the public health sector.

Strategic directions: Only high-standard, quality assured, sensitive and specific diagnostics should be selected and distributed to all eligible public health facilities. Diagnostics should be a) Available throughout in all points of care; and b) Affordable for patients attending public healthcare facilities. Skilled and motivated healthcare providers in the public health services should adhere to the national standard operational procedures developed and disseminated by NMCP and partners. Finally, quality assurance and quality control services should be continuously provided.

Deliverables: All eligible patients attending public health care services will be tested for malaria. It is expected to test (mRDT and microscopy) cumulatively 95,907,879 and 165,876,036 clients by 2023 and by 2025 respectively to reach at least 90% of the eligible people according to the guidelines. In public health facilities 80,300,725 mRDT (including pipeline replenishment in early 2021) and 4,139,610 microscopy tests will be performed in health facilities in three years (2021-2023). Additional 11,467,544 mRDT will be performed with different delivery channels (refugees, emergency and special situations, community, ACD, increase testing in low transmission areas, etc.).

Output Indicator: Proportion of malaria cases tested in the public healthcare delivery points out of total OPD visits (testing ratio)

Malaria risk:	
Very Low	Testing ratio in the health facilities within the very low and low malaria risk is largely and consistently below the national average. The reasons should be investigated and appropriate actions should be put in place to optimize passive detection among patients presenting with fever.
Low	
Moderate	Testing ratio in the health facilities within the moderate and high malaria risk is consistently above the national average. It is important to maintain testing to all suspect malaria cases in order to provide the optimal conditions to passively detect all malaria infected people reaching the public health service..
High	
Urban	Testing recommendations according to stratum

SDM 2.1.2: Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to people seeking treatment in the private sector

Situation: Malaria testing is provided by private sector operational health facilities (hospitals, health centers and dispensaries), autonomous health laboratory and other special clinics. Private sector testing ratio is above the national average (59% HMIS 2019). According to MSDQI, the quality of malaria diagnosis in the private sector, especially in the non-premium facilities, is generally sub-standard. The preferred testing methodology in the private sector is microscopy (78%) but in the recent years it has been observed an increase in mRDT testing (from 17% to 32% respectively in 2015 and 2019). Poor adherence to SOP and poor reporting, especially from autonomous health laboratory, contributes largely to the above findings.

Policy guidance: Private health laboratory services are subject to fulfill the requirements of the national regulatory boards and authorities. The quality of laboratory equipment and supplies is registered and monitored by TMDA.

Strategic directions: NMCP and the partner authorities will make sure that only high-standard, highly sensitive, and specific diagnostics will be available for use in private health facilities. To improve continuous accessibility and affordability to diagnostics, NMCP will negotiate with FLB's procurement of high-standard low-cost mRDT to ensure that malaria testing is affordable for patients attending private healthcare facilities. Quality of malaria testing services in the private sector, according to the set standards, will be supervised and monitored by the relevant PO-RALG level.

Deliverables: All private points of care providing malaria diagnostic services will be assessed, re-certified and accredited.

Output Indicator: Proportion of malaria cases tested in the private healthcare delivery sector out of total OPD visits.

Malaria risk

Very Low Low Moderate High	Standard approach
Urban	Private health sector is prominent in the most urbanized areas of the country where premium and non-premium facilities coexist. It is of paramount importance to monitor and strengthen quality services according to the standards provided.

SDM 2.1.3: Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to patients seeking treatment fever management beyond operational health facilities

Situation: The current testing rate of (43% MIS 2017) has been achieved after the scale up of mRDT in all public health services with a lower rate in rural areas (39%) compared to urban (56%). It is unlike to reach the desired testing rate of over 80% by promoting and conducting testing only in operational public and private health facilities.

Policy guidance: Malaria diagnosis guidelines indicate that malaria testing at community level, in drug outlets (ADDO) and as part of the CmCM approach, is technically feasible under stringent SOP.

Strategic directions: Rapid scale up of provision of malaria testing beyond operational health facilities is highly recommended to reach universal coverage especially in areas with low accessibility. A regulatory framework is needed to allow malaria testing in the above non-conventional diagnostic outlets. An appropriate M&E system should be, as well, introduced to verify adherence to SOPs. Electronic platform should be updated to accommodate the implementation of community level malaria testing.

Deliverables: Certified ADDO will be delivering quality malaria diagnostic services according to agreed SOP and under the established regulatory environment.

Output Indicator: Proportion of malaria tests performed in community outlets (ADDO and CmCM).

Malaria risk

Very Low Low	Establishing testing facilities at community level in very low and low risk strata is particularly needed to introduce more accountability in antimalarial use due to the possible effect in reducing symptomatic treatment without malaria test results. As well since the prevalence of non-malaria fever is still high, malaria testing will provide an opportunity of improving quality of fever management through differential diagnosis.
Moderate High	In moderate and high risk strata, expansion of malaria testing services at community level is crucial to reach the desired universal approach target especially by covering hard to reach areas and those with low access rate to operational health care facilities.
Urban	Community based approach not relevant due to generally adequate accessibility

SDM 2.1.4: Provide quality-assured and quality control in all malaria testing services

Situation: Between 2015 and 2020, NMCP defined, developed and introduced **mRDT testing accuracy and quality control (TAQC**) system in the entire country. The system includes continuous training, supervision and mentoring to improve the adherence of healthcare providers to the SOPs. The retained used mRDT cassettes are stored in the facility testing point, for three months to be examines by supervisors for quality testing as per SOP's before dispose. The four key indices for quality tests are cross checked. Patient's name or ID, Date of testing, Start & reading time, Test device with a white/colorless reading zone and No blood splatter and it could be done at OPD, RCH, IPD and LAB. In the same period, NMCP defined, developed and introduced **malaria microscope QAQC** system in the facilities providing malaria microscope services in the country. The system includes continuous training, supervision and mentoring to improve the adherence of healthcare providers to the SOPs. The three major components are: a) *External quality assurance* (EQA): Lab personnel at facility requires high proficiency in all the tasks stipulated from preparation of blood films to accurate detection, counting and identification of parasite species, reporting and recording the results of the examination; b) *Internal Quality Control* – is the daily control and self-monitoring of each stage of testing by laboratory Personnel to ensure that all tests are performed accurately and precisely. Internal QC is a required technical competence of medical laboratories for quality and the quality management system. It is used to confirm or recognize the competence of medical laboratories by regulatory authorities and accreditation bodies; and c) Blood *slide Cross checking* – The tested slides are retained for supervisor/second reader to cross check on quarterly basis the accuracy of results and can detect major deficiencies in laboratory performance due to level of competence, poor equipment, poor reagents, poor infrastructure or poor work practices.

The MSDQI demonstrate that the test accuracy quality control (TAQC) for mRDT performances is functional in very high proportion (over 90%) of Health facilities (MSDQI 2020) while the malaria microscopy quality assurance and quality control (QAQC) performances is below the standard in 70%-80% (2020 MSDQI) of the facility with microscopy services.

Alongside with the establishment of TAQC and QAQC, NMCP initiated a three years certification program for microscopists in both private and public sector.

Policy guidance: TAQC and QAQC are stipulated in the 2020 guidelines and SOP are available for consultation.

Strategic directions: Three major steps are expected to provide quality malaria testing: a) The MSDQI framework will guide and monitor the implementation of TAQC and QAQC through mentoring and coaching health supervisors and health workers from RHMT and CHMT up to health facilities; b) The National health Laboratory for quality assurance and quality control (NHLQA/QC) will provide support to blood smear bank and proficiency reading; and c) Microscopists re-certification will be also sustained throughout the strategic period.

Deliverables: Over 8,000 health care facilities providing malaria RDT will be assessed at least once per year to verify the status of TAQC. Approximately 600 public sector laboratory services, will be assessed, as well, at least twice per year for QAQC performances.

Output Indicator: Proportion of health facilities scored above 75% of TAQC services with RDT.

SDM 2.1.5: Introduce evidence-based, innovative diagnostic tools/system for malaria detection and differential diagnosis of other pathogens causing febrile illnesses

Situation: The sensitivity and specificity of mRDT is 98% and 100% respectively hence still high for testing malaria in the country. The potential risk of increased false negative mRDT test due to HRP2/3 gene deletion might decrease the current sensitivity of rapid tests. There are very limited options to test other antigens at point of care to provide evidence to fever differential diagnosis. Fever management algorithms are currently quite unspecific due to limited diagnostic options.

Policy guidance: Evidence based updated policy guidance will be provided if needed.

Strategic direction: Improved access to quality malaria diagnostics will be associated with introduction of fever management schemes and, eventually, innovative diagnostic tools to detect other pathogens and to facilitate differential diagnosis at all levels. Innovative malaria diagnostic technique will be explored, assessed in collaboration with research institutions, and eventually promoted if adequate and affordable.

Deliverables: Operation Research findings dissemination sessions annually during technical working group and larger stakeholders forums.

Output Indicator: Number of initiatives introducing evidence based innovative diagnostics tools.

Malaria risk

Very Low Low	Fever differential diagnostic algorithms are recommended to be introduced at this level of endemicity. Highly sensitive malaria diagnostics are also needed due to the expected low parasitaemia density and the risk of high rate of positive patients with undetectable parasitaemia (< 100-200 parasite per µL of blood)
Moderate High	NA
Urban	Fever differential diagnostic algorithms to be introduced in this operational stratum due to high heterogeneity of antigens causing fever

SA 2.2 Treatment of Malaria

Table 20: Malaria treatment strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
2.1	**Provide universal access to appropriate, quality and timely treatment to all people with malaria.**	% children under 5 with fever who were treated with recommended antimalarial the same or next day following the onset of fever	35%	2017	MIS	40%	50%
		Very Low	2%			10	20
		Low	27%			40	50
		Moderate	35%			45	50
		High	45%			60	70
		Urban	21%			40	50
	Malaria Treatment Service Delivery Mechanisms						
2.2.1	Provide highly efficacious, accessible, affordable, equitable, and quality-assured antimalarial to patients seeking treatment in the public sector						
2.2.2	Facilitate the provision of accessible, affordable, and quality-assured antimalarial to patients seeking treatment in the private sector						
2.2.3	Facilitate the provision of high-standard, accessible, affordable, and quality-assured management to patients seeking treatment beyond the operational health facilities in identified suitable operational areas						
2.2.4	Provide high-quality severe malaria management services by skilled providers in public, private and community.						

Situation: Nationally representative surveys (TDHS & THMIS) indicate that access and utilization of treatment with the recommended antimalarials within 24 hours after the onset of fever by children less than 5 years, has not improved for the last 10 years and is currently around 34.5% (MIS 2017). Countrywide, ACTs have been used by 89% of the patients treated with antimalarials (MIS 2017). In the last decade 190 Million ACT (Alu) were procured for the public sector.

Policy guidance: The national guidelines for malaria diagnosis, treatment and preventive therapies 2020, define the therapeutics of choice, the recommended clinical procedures, and their application at various levels of the healthcare delivery system in public, private, and community-based sectors. Standard uncomplicated and severe malaria management protocols and recommendations on antimalarials resistance mitigations are included into the guidelines. The guidelines indications are regularly updated according to the status of therapeutic efficacy of antimalarials, evidence based implementation researches in the country, and the global recommendations from WHO GMP.

Strategic direction: Universal access to appropriate, quality and timely treatment has not been achieved in the implementation of previous NMSPs periods. Alternative additional service delivery mechanisms are needed to attempt reaching the target. To improve affordability, treatment with ACTs will continue to be free in the public facilities, while efforts will be made to encourage the private sector to provide quality assured ACTs at the lowest possible price. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 20. SDM indicators and targets are described in Annex 4. Specific indications for malaria treatment will follow malaria risk stratification according to transmission level and strategic target (Table 21).

Deliverable: at least 85% of individuals with malaria infection are reached with appropriate treatment

Table 21: malaria treatment implementation and malaria risk stratification

Malaria risk	Description
Very Low	Universal treatment for passively and actively detected patients is recommended in this strata targeting malaria elimination. Additional anti-gametocydal treatment with low single dose (LSD) Primaquine is also recommended. Active case detection is also advocated in these strata to detect infected asymptomatic people that are potential to maintain the residual transmission, and treat them with ACT + PQ.
Low	
Moderate	The strategy needs consistent efforts to increase access to malaria treatment by using innovative and large scale approaches such as subsidized ACT with affordable price in private sector, expanding treatment accessibility at the community level by using CmCM approach. The Tanzanian malaria modeling demonstrates that case management should target a coverage of 85% and more of malaria cases appropriately managed to be potential not only to increase case management effectiveness but also to decrease transmission
High	
Urban	The private sector is the major service provider in urban areas. Adherence to national guidelines in these points of care needs to be addressed.

SDM 2.2.1: Provide highly efficacious, accessible, affordable, equitable, and quality-assured antimalarial to patients seeking treatment in the public sector

Situation: In the last decade over 190 ACT (Alu) were procured for the public sector and uninterrupted distribution has been maintained in public healthcare facilities with currently a minimum level of stock out (2.3% for Alu in 2019). There is still inconsistency in accountability with dispensing ratio (e.g. dispensed treatments vs confirmed malaria diagnosis of about 1.2).

Policy guidance: The management of uncomplicated and severe malaria is stipulated in the 2020 NGMDT&PT. Malaria medicines are supplied to all healthcare facilities at regular interval and are stored and dispensed according to SOPs. Service delivery data at storage and dispensing are recorded and reported through standard HMIS (tracker medicines and dispensing tools).

Strategic direction: Continue to ensure that all patients attending public healthcare facilities will be managed with the recommended high efficacy antimalarials according to the national guidelines. The quality of malaria case management services will be continuously assessed through the malaria services and data quality improvement framework (MSDQI) that is generating a quality improvement plan for each service delivery point. Treatment with ACTs will continue to be free in the public facilities.

Deliverables: cumulatively 26,157,982 and 43,970,267 patients attending public health facilities will get an appropriate diagnosis and related ACT treatment in the NMSP phase 1 and 2 respectively, Additional Primaquine will be added to ACT in very low strata reaching 241,266 and 474,627 patients by 2023 and 2025 respectively.

Output Indicator: Ration of Malaria patients dispensed with a QAACT in public health facilities.

SDM 2.2.2: Facilitate the provision of accessible, affordable, and quality-assured antimalarial to patients seeking treatment in the private sector

Situation: About 30% of malaria treatments are delivered by private sector (MIS 2017). In 2018, 5,470,748 subsidized ACT treatments were procured through the GF based co-paid mechanism (CPM) and distributed in private outlets.

Rationale: Experiences from Affordable Medicine Facility for malaria – AMFm (2010–2013) and its continuation through GF co-paid mechanisms – CPM (2015 onwards) shown that there was high demand for quality assured and affordable ACTs (QAACT) in the private sector. With a high level of presumptive treatment of suspected malaria, it was challenging to saturate the market with continuous supply of affordable QAACTs and, consequently, the gap was filled by continued sale of not recommended antimalarial medicines. In the course of implementation of this strategic plan, subsidized ACTs must be better targeted to those with malaria, and work is still needed to remove less effective treatments from the marketplace. CPM is a business model where GF, MoFP, MoHCDGEC and private sector participate in procuring ACTs and make them available at a subsidized price. The procurement cost is paid by GF and FLB based on agreed co-payment ratio. Subsidized ACTs are identified by Green Leaf Logo on the medicine secondary packaging.

Policy guidance: in Tanzania private health sector is structured and operating according to the indications of the regulatory authorities. The NGMDT&PT stipulates the minimum standard for management of malaria in all facilities according to level and ownership.

Strategic direction: In the course of implementation of this strategic plan, subsidized ACTs must be better targeted to those with malaria, and work is still needed to remove less effective treatments from the marketplace. To improve affordability, NMCP will continue to work with medicines importers, wholesalers, retailers and outlets to provide QAACTs at the lowest possible price.

Deliverables: Cumulatively 17,438,654 and 29,313,512 patients attending private health facilities will get an appropriate subsidized QAACT in the Strategic Plan phase 1 and 2 respectively.

Output Indicator: Ratio of malaria patients dispensed with a QAACT in private health facilities.

Malaria risk

Very Low Low Moderate High	Standard approach
Urban	Private health sector is prominent in the most urbanized areas of the country where premium and non-premium facilities coexist. Adherence to standard guidelines should generally emphasized together with continuous assessment of quality of services

SDM 2.2.3: Facilitate the provision of high-standard, accessible, affordable, and quality-assured management to patients seeking treatment beyond the operational health facilities in identified suitable operational areas

Situations: About 10% of Tanzanian population has low access to health facilities in term of more than one-hour walking distance. Overstretched health care services and hard to reach areas are the major obstacle to promote universal access to all Tanzanians. In 2020, 28 councils in 5 regions were targeted for inception of CmCM.

Rationale: Malaria community case management (CmCM) promotes the early recognition, prompt testing and appropriate treatment of malaria among all age groups in areas with limited access to facility-based health care providers.

Policy guidance: NGMD&T 2020 stipulates the requirements for management of malaria at household and community level.

Strategic direction: Establish an equitable and efficient system for delivery of community malaria case management services as an extended arm of the public health service. The service will be facilitated within the routine delivery system by using current logistic and M&E frameworks. Priority areas for the introduction and establishment of CmCM services are: a) High malaria risk; b) Hard to reach; c) Overstretched health services.

Deliverables: Guiding documents and appropriate plans will be in place to reach underserved villages with basic malaria diagnosis and treatment.

Output Indicator: Proportion of patients treated within the CmCM framework.

Malaria Risk	
Very Low Low	Community malaria case management is highly recommended in these risk settings to increase performances under the malaria case based surveillance framework.
Moderate High	Community malaria case management is highly recommended in these risk settings to increase access to services especially in underserved and high to reach areas
Urban	Community based approach not relevant due to generally adequate accessibility.

SDM 2.2.4: Provide high-quality severe malaria management services by skilled providers in public, private and community services

Situation: Current severe malaria clinical managements is conducted at all levels of healthcare system. Pre-referral management is offered at dispensary level while admitting facilities are equipped for i.v. therapies and more intensive care. The number of patients admitted with severe malaria is slightly declining from 334,711 in 2017 to 306,438 in 2020 (8% decline).

Rationale: appropriate management of severe febrile cases is expected to decrease unnecessary fatalities. A continuum of improved care for severe diseases should be provided from pre referral level (community and first line health services) to secondary and tertiary levels.

Policy guidance: NGMD&T 2014 highlights the severe malaria managements at different level of health care.

Strategic direction: Health care service providers' capacity for differential diagnosis and management of severe fever cases will be strengthened at all level of health care delivery system. Health worker competencies will be enhanced in this area through several initiatives including: a) promotion of correct management of severe malaria according to level of health care; b) guidance on appropriate nursing care for patients admitted due to severe diseases; c) provide supportive supervision and specific training for in service and pre service staff.

Deliverables: all expected severe malaria patients admitted, 843,090 and 1,352,688 cumulatively in phase 1 (2021-2023) and phase 2 (2023-2025) of the NMSP, will be properly managed according to guidelines.

Output Indicator: Case fatality rate%

SA 2.3 Malaria Preventive Therapies

Table 22: Malaria preventive strategies strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
2.3	Provide appropriate and effective services to reduce the risk of malaria infection and its complications among populations biologically and socioeconomic vulnerable to malaria.	% of women with live birth in the previous two years who received three doses or more of SP (IPTp3+)	25.8%	2017	MIS	70%	85%
		Very Low	30%			0%	0%
		Low	20%			70%	75%
		Moderate	25%			70%	75%
		High	30%			70%	75%
		Urban	42%			70%	75%
	Malaria Preventive Therapies Service Delivery Mechanisms						
2.3.1	Increase the uptake of IPTp3+ and CPT the HIV positive pregnant women in health facilities in low, moderate and high transmission areas to reduce vulnerability in pregnancy.						
2.3.2	Introduce the provision of SP for IPTi during vaccination schedule during infancy in high malaria risk areas.						
2.3.3	Introduce targeted antimalarial preventive therapies to identified vulnerable groups within high malaria risk areas.						

2.3.4	In the event of the introduction of a malaria vaccine, the country is able to rapidly scale up its use in suitable epidemiological and operational areas

Situation: The only current nationwide chemo-preventive intervention is the administration of SP for pregnant women as Intermittent Preventive Treatment during pregnancy (IPTp). The impact of malaria on a pregnant woman and her fetus differs with the intensity of malaria transmission but in all cases represents a significant burden on the health of mother and child. IPTp2 coverage has increased from 35.3% to 56.1% in 2015 and 2017 respectively (MIS). IPTp3+ coverage has increased from 8.0% to 25.8% in 2015 and 2017 respectively (MIS).

Policy guidance: Apart from pregnant women (whose immunity is decreased especially during the first and second pregnancy), the population groups most vulnerable to malaria infection and its complication are a) Infants and children who have not yet developed partial immunity to malaria; b) School-age children, who are becoming more susceptible to malaria infection due to the changing malaria epidemiology, especially in low transmission areas; c) Sickle cell anemia patients, due to the risk of a severe form of malaria and associated deaths; d) People living with HIV/AIDS due to the acquired immunodeficiency and higher risk of infection; and e) Travelers or migrants who come from areas with little or no malaria transmission and therefore have very low or no immunity.

Strategic directions: To reduce maternal morbidity and mortality and improve the newborns chances of survival, malaria in pregnancy will remain an essential part of the malaria control strategy (Table 22). If conditions will allow (demonstrated SP efficacy), during the implementation of the NMSP, another vulnerable group, infants, will be added to preventive therapies schemes (IPTi) in areas of the country at high risk of malaria. Other targeted chemo-preventive approaches including seasonal malaria chemoprevention (SMC), currently explored for their effectiveness, will be introduced in the course of this NMSP to increase protection and expand effectiveness of malaria case management in the most vulnerable groups. Malaria risk stratification is providing specific interventions according to transmission level and strategic target (Table 23).

Deliverables: The identified vulnerable groups will be protected according to recommended initiatives in the respective malaria risk settings

Table 23: malaria preventive therapies implementation and malaria risk stratification

Malaria risk	Description
Very Low	Withdrawing of routine IPTp intervention in very low transmission areas with mitigation measures in place, e.g. established malaria Case Based Surveillance, medical history, travel history.
Low Moderate	Limited chemo-preventive measures are currently recommended (IPTp, sickle cell patients).
High	This stratum needs a maximum effort to provide personal protection, to improve health of risk groups, increase effectiveness of malaria case management and eventually decrease transmission by reducing parasite biomass in the communities. Possible targeted mechanisms of increasing chemoprevention are: IPTi, targeted drug administration for risk groups (e.g. school children) and SMC.

SDM 2.3.1: Increase the uptake of IPTp3+ and CPT the HIV positive pregnant women in health facilities in low, moderate and high transmission areas to reduce vulnerability in pregnancy

Situation: Over the past few years of implementation supply of SP to Health facilities improved, though still stock outs are frequent (5% in 2020). Performance indicators in DHIS2 malaria dashboard show that the proportion of pregnant women attending health facility and receiving IPTp2 and IPTp3 raised respectively to 79% and 64% in 2020, from 66% and 31% in 2016.

Policy guidance: Management of malaria in pregnancy and the related preventive approaches are stipulated in the NMDT&PT. IPTp with SP is recommended for all pregnant women except in councils with very low malaria risk and where malaria case based surveillance has been established. Pregnant women living with HIV/AIDS should follow the PMCTC guidelines by using co-trimoxazole daily. All pregnant women unreceptively from epidemiological or biological risk should be recommended to use insecticides treated nets and they will be issued a LLIN at the time of their first ANC attendance.

Strategic directions: The focus of the strategy will be to increase up to 95% the number of women accessing IPTp2 and to 85% the number of women accessing IPTp2 through a) Improved supply chain management of SP; b) IPTp administration at each scheduled ANC visit; c) Improved capacity of healthcare providers through training and supervision; and d) Improved frequency of ANC attendance. Pregnant women attending ANC also will be encouraged to take medicine to prevent anemia and will be targeted to increase their access to LLIN through discount voucher or alternative schemes.

Deliverables: Cumulatively 7,147,424 and 12,296,742 pregnant women will be targeted for IPTp3+ by end of 2023 and 2025 respectively.

Output Indicator: Percentage of pregnant women attending ANC who receive SP as IPTp3+

Malaria risk	
Very Low	IPTp is recommended to be withdrawn in this stratum where CBS and risk mitigation have been established

Low	IPTp Recommended
Moderate	IPTp Recommended
High	IPTp Recommended
Urban	IPTp recommendations according to respective epidemiological risk stratum

SDM 2.3.2: Introduce the provision of SP for IPTi during vaccination schedule during infancy in high malaria risk areas

Situation: In mid-2000's IPTi was conducted in a large scale in southern and northern zones of Tanzania as randomized controlled trials. Recently an implementation research has been initiated to explore feasibility to scale up in the suitable epidemiological strata in moderate and high malaria risk councils. SP resistance mapping is also ongoing in the entire country.

Rationale: IPTi provides an overall protection in the first year of life: a) Against clinical malaria [30.3%]; b) Against anemia [21.3%]; c) Against hospital admissions associated with malaria parasitaemia [38.1%]; and d) Against all-cause hospital admissions [22.9%]. SP-IPTi offers a personal protection against clinical malaria for a period of approximately 35 days following the administration of each dose.

Policy guidance: IPTi is recommended by NGMDT&PT 2020 for the high malaria risk councils. SP is the medicine of choice for IPTi as indicated by WHO, provided that there is evidence of sufficient efficacy. In areas eligible for SMC, IPTi is not indicated. Alternative antimalarials should be explored for their efficacy in protecting infants.

Strategic Directions: The intervention should be introduced in all high risk councils to increase effectiveness of malaria case management. Protective efficacy of SP-IPTi is related to the half-life of the medicine and the susceptibility of the malaria parasite to SP. Therefore, parasite resistance to SP in the area should serve as a guide to implementation of SP-IPTi. Surveillance of molecular markers of SP resistance should accompany SP-IPTi, in particular the distribution and prevalence of *pfdhps 540* and 518 codon mutations which a surrogate measure of SP. Further Operational researches on alternative medicines, in case of high SP resistance, and different treatment schedule beyond the infancy, should be encouraged.

Deliverables: Cumulatively 7,192,399 and 12,325,744 infants in high risk settings will be better protected against malaria complications by taking three (3) doses of SP as IPTi by end of 2023 and 2025 respectively (if SP is demonstrating enough efficacy). An appropriate HMIS based reporting will be developed to accommodate IPTi.

Output Indicator: Proportion of infants who received IPT during vaccination schedule in selected epidemiological strata.

Malaria risk

Very Low Low	Not suitable for intervention
Moderate	Possible candidate for expanding the intervention
High	Recommended for rapid scale up of intervention according to prevalence of SP resistance marker
Urban	Recommended only in municipal areas in high transmission

SDM 2.3.3: Introduce targeted antimalarial preventive therapies to identified vulnerable groups within high malaria risk areas

Situation: NMCP identified the following groups (or situation) with high malaria vulnerability: a) **School age children**: there are several evidence that the parasite prevalence levels are progressively shifting from early childhood (children 1-5 years of age) to late childhood and early teenage stages (children 6-15 years of age), especially in high transmission areas. Recent observations (SMPS 2015, 2017 and 2019) have shown that school going age children in high malaria risk areas are easily carrying the parasites: 14% national average from 0% in North east regions to over 50% in highly affected areas (Geita region). In high risk strata more than 50% of school age going children have some degree of anemia. IPTsc is currently undertaken as randomized control trial and implementation research in the country, b) **Sickle cell patients**: in Tanzania there are 11,000 estimated number of newborns with SCD a year; c) **Non immune travelers** coming to the country from malaria non endemic areas are estimated to be over 1 million per year (pre-Covid 19); d) Councils with evidence of **high seasonal transmission** (at least 60% of precipitation in less than 3 months and 60% of malaria cases in less than 4 months), suitable for introduction of seasonal malaria chemoprevention (SMC). About 20 councils are included into this category but the majority of them are located in very low and low malaria risk areas. Only 6 councils are falling under moderate and high transmission risk in southern and central zones of the country.

Rationale: a) *Vulnerable groups with high parasitaemia burden*: parasitic clearance using ACTs has shown to be effective in clearing or reducing gametocytes carriage post treatment and some studies on school children have recommended use of ACTs for IPT in endemic settings where resistance to SP is high. A recent review on ACT impact on gametocytes argued that, if transmission is largely driven by asymptomatic individuals who do not seek treatment (especially school-aged children), then, the inclusion of these asymptomatically infected individuals in treatment campaigns may have a much larger impact on malaria transmission than the choice of ACT for first-line treatment; b) *Sickle cell disease:* apart from chemoprevention approaches, due to sickle cell patients' vulnerability to severe malaria, the most important approach to decrease their susceptibility is early diagnosis and treatment. Researchers should be encouraged to provide evidence on alternative medicines for malaria prophylaxis; c) *Travelers or migrants* coming from areas with little or no malaria transmission are advised to take malaria-suppressive prophylaxis; and d) *Seasonal malaria chemoprevention* (SMC), is defined as the intermittent administration of full treatment courses of an antimalarial medicine during the malaria season to prevent malarial illness with the objective of maintaining therapeutic antimalarial drug

concentrations in the blood throughout the period of greatest malarial risk. In areas where SMC is recommended and operational IPTi is not indicated.

Policy guidance: Provision of targeted antimalarial drug administration is recommended by the NGMDT&PT 2020 for its potential to decrease burden of infection in population living in malaria high risk areas and to increase effectiveness of malaria case management. NGMDT&PT identified different chemoprophylaxis and chemoprevention options to be explored for vulnerable and non-immune population. In the course of the NMSP implementation, the best available therapeutic option will be selected according to the efficacy profile and the cost benefit analysis.

Strategic Direction: Targeted drug administration in school children should be introduced in high transmission areas. The intervention should be integrated with LLIN distribution, health education and NTD interventions, to form a special school health package.

Deliverables: Cumulatively 4,709,324 and 9,536,683 school children in high malaria risk settings will be better protected against malaria and anemia by taking appropriate antimalarials by end of 2023 and 2025 respectively. Additionally, an average of 2,461 sickle cell patients will receive antimalarial prophylaxis annually.

Output Indicator: Proportion of risk group population who received antimalarial chemoprevention among all targeted risk group in selected epidemiological strata.

Malaria risk

Very Low Low	Not suitable for intervention
Moderate	Possible candidate for expanding the intervention
High	Highly recommended for rapid scale up and impact
Urban	Recommended in urban areas within high risk stratum

SDM 2.3.4: In the event of the introduction of a malaria vaccine, the country is able to rapidly scale up its use in suitable epidemiological and operational areas

Situation: Tanzania participated in the randomized controlled trials of RTS,S vaccine phase 2 and 3. The vaccine received the approval of EMA and endorsement by WHO. Currently phase 4 is conducted in a few countries.

Rationale: It has been demonstrated that the RTS,S malaria vaccine reduces clinical and severe cases of malaria by about one-third in 5–17-month-old children who received the three-dose vaccine series plus a booster dose. The vaccine is generally safe. Notably, the vaccine provides this protection in settings where there is ongoing use of other effective malaria prevention and treatment interventions such as LLIN, IRS, intermittent preventive therapy for infants and pregnant women and antimalarial medicine.

Policy guidance: Waiting for more evidence in phase 4 trails, no specific policy framework has been developed in Tanzania.

Strategic Direction: Reduction in vulnerability of infant and young children through the introduction of malaria vaccine is an attractive public health initiative, and its introduction will be assessed and considered during the implementation of this strategic plan. After collecting enough evidence, NMCP will spearhead a broad consultative process to promote an innovative delivery of recommended vaccines within the healthcare system.

Deliverables: An ad hoc implementation plan will be developed in the event of introduction of malaria vaccine services.

Output Indicator: In the event of introduction of malaria vaccine services a joint implementation plan available.

Malaria risk

Very Low Low	Not suitable for intervention
Moderate	Possible candidate for introduction of the intervention
High	Highly recommended for evidence based introduction of malaria immunization services
Urban	Recommended in urban areas within high risk stratum if indicated by evidence of vaccine impact

SA 2.4 Malaria case management in vulnerable population and special situation

Table 24: Malaria case management in special situation strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
2.4	Deploy appropriate malaria case management and preventive therapies interventions in suitable epidemiological and operational areas, in the event of emergency situations, and in	Proportion of identified people reached with special/specific initiatives	NA	2019	DHIS2 NMCP Composite database	80%	80%
		Very Low	NA			TBD	TBD
		Low	NA			TBD	TBD
		Moderate	NA			TBD	TBD
		High	NA			TBD	TBD

	peculiar population groups to reduce the risk of severe morbidity and mortality	Urban	NA			TBD	TBD
	Malaria Case Management in Special Situation Service Delivery Mechanisms						
2.4.1	Provide appropriate initiatives as response to emergency situation including outbreak						
2.4.2	Introduce malaria case management as part of case based surveillance response in identified very low transmission areas						
2.4.3	Introduce the provision of selected diagnosis and treatment approaches for risk mitigation and burden reduction through focal testing and treatment and mass drug administration in suitable epidemiological and operational areas						
2.4.4	Improve malaria case management for specific population groups to be targeted with special initiatives						

Situation: Aspects related to malaria **biological vulnerability** and impaired **access to health services vulnerability** are covered through routine malaria case management interventions under the previous strategic approaches (see SA 2.1, 2.2 and 2.3 above). Approximately one-third of the country population is living in low and very low malaria risk areas. This situation has been reached after a decade of implementation of malaria control initiatives, though the achievement is still fragile resulting in increased transmission instability and **emergency driven vulnerability** with risk of rebounds and outbreaks. As well, large areas of the country are undergoing unprecedented socio economic transformation due to the ongoing development and economic projects with **occupational, exposure, livelihood and behavioral vulnerability** to malaria infection. Another significant population segment is still in disadvantaged social and wealth situation or and with substandard access to health care facilities contributing to **socio-economic vulnerability**. For more details on malaria and population vulnerability see Annex 5.

Rationale: The changed epidemiology of malaria in Tanzania presents a few scenarios where malaria case management should be delivered with different modalities compared to the conventional, individual-based approaches: a) Resurgence of malaria transmission in areas previously controlled, b) Incumbent malaria epidemics, c) Identified persistent transmission foci in areas of extremely low transmission; and d) Specific population segments with high occupational and socio economic exposure to the disease. Response to the above epidemiological circumstances should be considered in the implementation of this strategic plan.

Policy guidance: The NGMDT&PT 2020 stipulate appropriate approaches to introduce innovative intervention for specific situations at different malaria risk.

Strategic direction: In the course of the implementation of the NMSP this strategic approach will be emphasized. Still operational and regulatory matters need to be considered. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 24. SDM indicators and targets are described in Annex 4. Malaria risk is guiding the strategic direction for special initiatives according to case load and needs (Table 25).

Deliverables: The identified special situations and special targeted groups will be accessing malaria case management services according to recommended initiatives in the respective malaria risk settings

Table 25: malaria case management in special situation implementation and malaria risk stratification

Very Low	In areas with very low malaria risk the focus will be on: a) ACD as a component of mCBS; b) Early detection and control of malaria epidemics; and c) Control transmission resurgence
Low	In areas with low malaria risk the focus will be on: a) Early detection and control of malaria epidemics; and b) Control transmission resurgence
Moderate High	In areas with moderate and high malaria risk the focus will be on reaching with appropriate case management the most at risk population including: a) People with increased occupational exposure; b) Migrant and refugees; c) Employees and seasonal workers
Urban	In urban areas the focus will be on provision of adequate malaria case management services for socio-economic disadvantage

SDM 2.4.1: Provide appropriate initiatives as response to emergency situation including outbreak

Situation: In spite the increased transmission instability, malaria outbreaks remains quite a rare event. Currently the MEEWS within the TMA and MEEDS within eIDSR are quite dysfunctional and there is a potential risk of not detecting and reporting epidemic events. According to history of epidemic occurrence and climatic suitability all councils in very low and low malaria risk areas have been classified as epidemic prone.

Rationale: Malaria outbreaks should be detected and response activated within two weeks from the onset while the epidemic curve is going up. Though, a very sensitive and specific MEEDS should be in place malaria case management initiatives, including early detection of cases and mass drug administration, should be the immediate response in order to decrease severe morbidity and mortality.

Policy guidance: Malaria case management interventions in case of epidemics or emergency situations are stipulated in the NGMDT&PT 2020.

Strategic Direction: Once a functional MEEDS is in place, councils in epidemic prone areas should be capacitated to provide immediate response in case of malaria resurgence or outbreaks.

Deliverables: Preparedness plan in place and council response teams able to provide rapid malaria case management response in the event of malaria outbreaks.

Output Indicator: Proportion of malaria cases tested in the public healthcare delivery sector out of total OPD visits (testing ratio).

Malaria risk

Very Low Low	Majority of epidemic prone Councils fall in very low and low malaria risk strata.
Moderate High	Some defined areas within moderate and high risk might be considered for implementing MEEDS and epidemic preparedness.
Urban	Indications for respective epidemiological risk areas to be followed,

SDM 2.4.2: Introduce malaria case management as part of case based surveillance response in identified very low transmission areas

Situation: A total of 36 councils are currently in the epidemiological situation eligible for the introduction of malaria case based surveillance (mCBS)

Rationale: The aim of case based surveillance is to determine whether an infection was acquired locally and the likely location of infection, and therefore whether there is indigenous malaria transmission or factors that may lead to onward transmission in identified foci. The response should be based on focal malaria case management and vector control initiatives. MDA is very potential to reduce or interrupt transmission in very low transmission with sustained impact. The objectives of MDA can be to reduce or interrupt transmission, to rapidly reduce malaria morbidity and mortality, or to prevent relapses and resulting malaria transmission.

Policy guidance: In Tanzania mCBS is currently introduced in very low transmission risk areas, and will be expanded in low transmission risk strata. mCBS reference manual (2020) defines the necessary steps for implementation of ACD and foci response. Diagnostic and therapeutic options for ACD are provided in the NGMDT&PT 2020.

Strategic direction: The intervention is expected to be scaled up from 3 regions in 2020 to 5 regions in 2023. However, if the current trend will be sustained, more councils will become eligible for implementing mCBS. Within the sub-district micro stratification and consequent micro-planning, more areas suitable for mCBS will be identified especially in low malaria risk councils. The regulatory framework for more community engagement in the implementation of ACD through the involvement of community focal persons need to be discussed and agreed upon by the relevant authorities.

Deliverables: 129,649 passively detected cases will be targeted for follow up, with 648,245 contacts actively tested of which 32,412 are expected to be positive for malaria parasites and treated with an ACT and additional primaquine in the first three years of the NMSP.

Output Indicator: Proportion of people actively screened for malaria parasites.

Malaria risk

Very Low Low	Majority of epidemic prone Councils fall in very low and low malaria risk strata.
Moderate High	Some defined areas within moderate and high risk might be considered for implementing MEEDS and epidemic preparedness
Urban	Indications for respective epidemiological risk areas to be followed

SDM 2.4.3: Introduce the provision of targeted approaches for malaria risk mitigation and burden reduction through focal testing and treatment services and mass drug administration in suitable epidemiological and operational areas

Situation: Some innovative interventions based on testing and treatment in selected communities are currently explored for their efficacy, effectiveness and feasibility in limited areas of the country. Potentiality of their deployment in suitable epidemiological conditions or emergency situations has not been implemented so far.

Rationale: Targeted Mass Drug Administration (MDA) and testing and treatment (TAT) have received increasing interest in the context of both malaria elimination and burden reduction.

Policy guidance: Both TAT and MDA are included in the NGMDT&PT 2020 as possible targeted interventions to be further explored.

Strategic direction: The above measures are potential for both malaria burden reduction and elimination scenarios. Appropriate delivery mechanisms and the regulatory framework should be agreed upon and tested before introduction. Community engagement is essential for the implementation and scale up of both MDA and FTAT.

Deliverables: 512,076 people are expected to be reached with MDA or TAT services in the first three years of the NMSP.

Output Indicator: Proportion of people treated in epidemiological and operational areas identified.

Malaria risk

Very Low	In very low transmission risk areas, MDA as response to residual transmission foci. FTAT not recommended in this stratum due to the presence of undetectable low parasitaemia.
Low	In low transmission risk areas, MDA is indicated as immediate response in case of malaria outbreaks.
Moderate High	MDA to be deployed only in case of complex emergency. TAT is currently under verification in this risk setting
Urban	As indicated in respective epi setting

SDM 2.4.4: Improve malaria case management for specific population groups to be targeted with special initiatives

Situation: see Annex 5 for detailed analysis of special groups and vulnerability. In this SDM Vulnerability due to occupational exposure, livelihood & behavioral aspects and socio-economic situation are targeted.

Rationale: Specific targeted case management (and preventive therapies, see SA 2.3) approaches might be useful to improve access to malaria case management for a number of segments of the population that for occupational reasons, livelihood, are mobile and living temporarily or permanently far from operational health facilities: among them: fishermen, nomads, seasonal laborers, workforce in large civil construction projects, and miners.

Policy guidance: the NGMDT&PT describe potential approaches for malaria case management in disadvantaged and marginalized population groups e.g. refugees, population living in hard to reach areas or with inadequate access to healthcare facilities, and population with low wealth level.

Strategic Direction: not conventional targeted approaches should be recommended and explored to reach the above targeted specific groups, such as outreach services, regular testing and treatment, establishment of temporary health facilities.

Deliverables: protocol for targeted specific malaria case management interventions in place to guide implementing partners in delivery of quality and appropriate services for special population groups.

Output Indicator: People from specific population groups treated in identified epidemiological and operational areas.

Malaria Surveillance, Monitoring and Evaluation Strategy

Surveillance Monitoring and Evaluation (SM&E) Outline

Table 26: SM&E strategic approaches

	Strategic Objective
3	**To provide timely and reliable information on malaria and its control needed to take appropriate actions in different transmission risk and ensure resources are used in the most cost-effective manner**
	Strategic approaches
3.1	**Strengthen comprehensive malaria surveillance and response in health facilities for improved programmatic performance**
3.2	**Strengthen malaria framework for collecting, processing and storing essential indictors from periodic service delivery initiatives and programmatic surveys in the communities**
3.3	**Strengthen a comprehensive malaria strategic information system to generate knowledge for evidence-based planning and decision making at all levels**

SM&E Background

Situation: The National Malaria Control Program has been implementing, until 2018, blanket (one size fit all) malaria control interventions across all regions. However, heterogeneity of malaria risk and burden have been observed across regions and councils. In order to reduce the National malaria case incidence by at least 90% by 2030 (in line with the WHO Global Technical Strategy for malaria 2016-2030); implementation of malaria interventions based on intensity of transmission in different geographical areas in the country was introduced in 2018. Stratification of malaria transmission risk in the country was conducted to assign the subnational level to different epidemiological and operational strata where different combinations of targeted interventions are potential to be delivered with increased efficacy, effectiveness, equity and in a more economical way (4Es). The stratification was done based on five indicators namely; prevalence (SMPS), confirmed incidence /1000 (OPD), positivity rate in pregnant women (ANC), annual parasite incidence (API) and Test Positivity Rate (TPR) and four malaria epidemiological strata were formed; High (malaria transmission risk >30), Moderate (malaria transmission risk 5 - <30), Low (transmission risk 1-<5) and very Low (transmission risk <1). The program continued to monitor malaria disease burden across the country and updated the malaria transmission risk stratification in 2020.

Policy guidance: The Global Technical Strategy for malaria 2016-2030 mentioned malaria stratification as a key approach to optimizing malaria responses within a country. It also recommends for surveillance of malaria to be upgraded to a core intervention

in national and subnational malaria strategies. The strategic objective and its strategic approaches are summarized in Table 26. Epidemiological characteristics of the identified strata are summarized in Table 27.

Strategic direction: Continue to monitor malaria services and produce timely updates on the burden of the disease in the country to enable timely response and achievement of intended levels of coverage and impact.

Deliverables: Increased number of councils with very low malaria transmission risk.

Table 27: SM&E strategy according to malaria risk strata

Malaria risk	Description
Very Low	The councils in this stratum have been consistently demonstrating less than 1% prevalence and a very low case load of less than 15 cases per 1000 population per annum.
Low	The councils in this stratum have been consistently demonstrating between 1% to less than 5% prevalence and a quite low case load of less than 50 cases per 1000 population per annum
Moderate	The councils in this stratum have been consistently demonstrating more than 5% and less than 30% prevalence and a case between 50 and 150 per 1000 population per annum
High	The councils in this stratum have been consistently demonstrating more than 30% prevalence and a high case load of more 150 cases per 1000 population per annum
Urban	This is not an epidemiological stratum but rather an operational one. The interventions for this non epidemiological stratum would thus be aligned to the interventions for the stratum within which the geographical areas fall

SA 3.1 Routine Health Facility Malaria Surveillance

Table 28: Malaria surveillance strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
3.1	Strengthen comprehensive malaria surveillance and response for improved programmatic performance	Proportion of health facilities scoring 75% and above on data quality according to MSDQI DQA checklist	65%	2020	MSDQI dashboard	75%	85%
	Service delivery mechanisms						
3.1.1.	Strengthen malaria surveillance and response across all epidemiological strata by improving the use of quality routine HMIS malaria data to generate reliable malaria indicators.						
3.1.2	Strengthen capacity for malaria epidemics detection, investigation and containment at Council and health facility level in epidemic prone areas.						
3.1.3	Implementation of Case Based Surveillance to support elimination interventions in very low malaria transmission risk areas.						

Situation: Malaria surveillance is mainly passive done through existing health facility based data collection systems. HMIS / DHIS 2 collects data related to both disease status and programmatic issues. Programmatic issues captured by HMIS include malaria commodities (medicine, LLINs) availability, issued to clients and stock outs. At health facility level HMIS data is filled on daily basis using HMIS books, aggregated and submitted to Council level on monthly basis. This means Council, Regional and National levels can access, analyze and interpret health facility data on monthly basis. Analysis and interpretation of the data enables all levels (Health facility, Council, Regional and National) to assess disease burden trends, track commodities availability and detect malaria outbreaks for moderate and high transmission areas. eIDSR system reports aggregated weekly data of all notifiable diseases including malaria. This facilitates detection of malaria outbreaks and response in low and very low malaria transmission risk areas.

Policy guidance: Global Technical Strategy for malaria 2016-2030 recommends surveillance to be strengthened to monitor disease trends, detect, prevent occurrence of disease outbreaks, trigger investigation and responses, and interrupt malaria transmissions in areas with very low transmission risk in order to accelerate to malaria elimination. In the country policy and guidance are included in three documents: a) malaria case based surveillance reference manual (2020); surveillance, monitoring and evaluation plan (2021) and malaria surveillance and response guidelines (2017).

Strategic direction: Generate malaria related data both epidemiological and programmatic performance to monitor malaria transition and guide informed decision making. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 28. SDM indicators and targets are described in Annex 4. Different surveillance approaches are targeting the continuum of transmission from very low to high transmission (Table 29).

Deliverables: Comprehensive malaria surveillance and response will be strengthened in all councils for improved programmatic performance by using quality health facility generated malaria data.

Table 29: malaria surveillance implementation and malaria risk stratification

Malaria risk	Approach according to risk
Very Low	Immediate notification of malaria cases is indicated within malaria case based surveillance. Routine weekly and monthly reporting will compliment this approach.
Low	Weekly reporting and functional MEEDS is indicated in this malaria risk stratum for epidemic preparedness and response together with routine monthly HMIS based malaria surveillance.
Moderate High	Routine monthly surveillance and response based on HMIS is recommended in moderate and high malaria risk areas.
Urban	The surveillance approach depend on the respective epidemiological stratum of the city and municipal council.

SDM 3.1.1: Strengthen malaria surveillance and response across all epidemiological strata by improving the use of quality routine HMIS malaria data to generate reliable malaria indicators

Situation: Regardless of transmission intensity, all health facilities (Public and Private) reports monthly malaria data through DHIS2 system. Monthly counts of malaria cases and deaths captured through the system are used to determine trends over time, geographical distribution of malaria and to detect malaria outbreaks for action. Also malaria commodities data reported through the system is used to assess availability / stock out of the commodities and facilitate planning to ensure universal access to malaria prevention, diagnosis and treatment at all health facilities. In recent years there have been innovations of developing a Malaria Services and Data Quality Improvement (MSDQI) tool to support tracking the provision of malaria services in health facilities and assess the quality of malaria data generated. MSDQI has recently been updated to electronic form and it focuses on six areas that include OPD, Laboratory, RCH, Pharmacy, malaria testing using mRDT and Microscopy. Data generated through MSDQI is important for program implementation efficiency and re-programming. Data is also monitored through other routine meetings. Three routine indicators are used to develop the epidemiological information for stratification.

Policy guidance: National surveillance guideline recommends surveillance across all points as a means to reduce transmission intensity.

Strategic direction: Availability of quality data can only be achieved through constant monitoring and support to health facilities which are the units of service data collection in the country thus strengthening malaria surveillance for monitoring progress and guiding the informed decision making is critical.

Deliverables: Use of quality routine HMIS malaria data to generate reliable malaria indicators is improved in all public and private health facilities.

Output Indicator: Proportion of health facilities visited for MSDQI assessed for DQA.

Malaria risk	
Very Low Low	Routine HMIS is recommended in association with immediate and weekly reporting where mCBS and MEEDS are eligible
Moderate High	Routine HMIS is the principle surveillance reporting system
Urban	According to epidemiological strata

SDM 3.1.2: Strengthen capacity for malaria epidemics detection, investigation and containment at Council and health facility level in epidemic prone areas

Situation: Currently the systems expected to detect epidemics through weekly reporting of malaria cases within the IDSR is not specific and sensitive enough to capture outbreak alerts. Malaria epidemics are mainly investigated after being reported outside the information system by community leaders, healthcare workers and community members.

Rationale: Timely detection, investigation, confirmation and response to an outbreak reduces the morbidity and mortality and prevents its further spread thus repositioning of malaria in the IDSR to enable timely detection of malaria outbreaks in epidemic prone areas is important.

Policy guideline: The International Health Regulation (IHR), stipulates that disease outbreak investigation and response are among surveillance core capacities that need to be strengthened at all levels.

Strategic direction: Due to the current malaria epidemiological transition, it is expected that more areas in Tanzania will become unstable for malaria transmission, hence prone to insurgence of outbreaks. To ensure early detection and containment of malaria outbreaks there is a need of strengthening outbreak detection and response capacities at all levels.

Deliverables: Capacity for malaria epidemics detection, investigation and containment will be strengthened in all 32 councils in low transmission areas.

Output Indicator: Proportion of epidemic alerts investigated within two weeks of onset.

Malaria risk	
Very Low	Recommended in association with mCBS where eligible
Low	Highly recommended due to malaria transmission instability
Moderate High Urban	Not recommended in normal circumstances, it might be recommended in selected epidemiological sub-districts level according to micro stratification

SDM 3.1.3: Implementation of malaria Case Based Surveillance to support elimination interventions in very low malaria transmission risk areas

Situation: 36 (19.6%) of all councils in Mainland Tanzania are in very low transmission risk epidemiological strata consistently demonstrating less than 1% prevalence and a very low case load of less than 15 malaria cases per 1000 population per annum making them eligible for malaria Case Based Surveillance (mCBS) towards elimination. 17 Councils of Arusha, Manyara and Kilimanjaro regions have been selected to start implementation of mCBS in year 2021, and additional seven (7) Councils of Njombe and Iringa regions to start implementation in year 2022. NMCP in collaboration with partners has established a system for implementation of mCBS by the eligible Councils. A mCBS reference manual (2020), training manual and electronic notification system for immediate case notification have been developed. Also RHMT, CHMT and health facility staff from 17 Councils from Arusha, Manyara and Kilimanjaro regions have been oriented on mCBS implementation. During mCBS implementation the implementing Health facilities will provide immediate notification of passively detected cases, conduct active follow up of the cases to household level, screen and test all household contacts whether symptomatic or asymptomatic and provide treatment to those found to be positive. For areas that will persistently be reporting cases focus investigation and response will be conducted.

Policy guidance: Global Technical Strategy for malaria 2016 - 2030 stipulates that it is necessary to investigate individual cases of infection or clusters of cases in order to understand risk factors and eliminate foci of transmission.

Strategic direction: Due to increase of the population living in very low risk transmission risk areas there is need to implement malaria Case based surveillance for all Councils with very low transmission risk.

Deliverables: Malaria case based surveillance to support elimination interventions implemented in 24 Councils with very low malaria transmission risk.

Output Indicator: Proportion of malaria cases targeted for follow that have been investigated in Councils implementing CBS.

Malaria risk	Service Delivery Mechanism according to risk
Very Low	mCBS will be implemented by councils with very low malaria transmission risk
Low	mCBS might be applied in sub set of this stratum according to micro planning following identification of stabilized very low transmission
Moderate	Not Applicable
High	Not Applicable
Urban	This is not an epidemiological but an operational stratum. This stratum includes all Municipals and City councils that belong to either of the four epidemiological strata depending on the malaria transmission risk. The procedures will be as similar as other councils in the very low malaria strata

SA 3.2 Malaria Programmatic Surveillance

Table 30: Malaria surveys strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
3.2	Strengthen malaria framework for collecting, processing and storing essential indictors from periodic service delivery and programmatic surveys	Proportion of available periodic service delivery and programmatic surveys reports available	100%	2020	Composite database (DHIS)	100%	100%
	Survey Service delivery mechanisms						
3.2.1	Coordinate and conduct representative population surveys according to SME plan.						
3.2.2	Strengthen longitudinal vigilance of malaria parasitaemia in sentinel population: Pregnant women at ANC.						
3.2.3	Conduct standard antimalarial Therapeutic Efficacy Study (TES) in sentinel sites as per WHO standard protocol						
3.2.4	Strengthen longitudinal monitoring of mosquito population dynamics in the sentinel sites.						

3.2.5	Strengthen longitudinal monitoring of efficacy and effectiveness of insecticides in national representative sentinel sites.
3.2.6	Coordinate the collection, analysis, interpretation and use of the programmatic monitoring of vector control initiatives (including LLINs, IRS and LSM) data.
3.2.7	Establish capacity for malaria related molecular surveillance for programmatic monitoring of parasites and vector dynamics.

Situation: Malaria data is generated from various sources which can be grouped into two namely; routine and non-routine. This strategic approach focuses on non-routine data namely periodic service delivery and programmatic surveys including Malaria Indicator Survey (MIS), School Malaria Parasitaemia Survey (SMPS), Anti-malaria Therapeutic Efficacy Studies (TES), Insecticide Susceptibility Testing (ISM), and Malaria Vector Surveillance (MVS). Some of these surveys are conducted by NMCP and some are contracted out to implementing partner Institutions. There has been a longstanding challenge of obtaining complete and timely report for contracted surveys as there is no system to collate, analyze and generate outputs in a centralized source. Reports are mainly kept by the implementing institution(s) or individuals depending on the nature of service delivered or survey conducted.

Rationale: Decisions on malaria control intervention to be implemented in the country are based on routine and non-routine data example; stratification of malaria transmission risk is done using routine data and survey data hence strengthening of periodic service delivery and programmatic surveys is crucial.

Policy guidance: The WHO Global Technical Strategy for Malaria 2016-2030 stipulates that basic and implementation research are essential for a better understanding of malaria parasites and the vectors, to develop more effective diagnostics and medicines, improved and innovative vector control methods, and other tools such as vaccines, optimizing impact and cost−effectiveness, and facilitating rapid uptake in populations at risk. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 30. SDM indicators and targets are described in Annex 4.

Strategic direction: Harmonization of non-routine data requires strong system to ensuring efficient data use to guide allocation of resources and other informed decisions at all health care delivery levels. Availability of surveys and service delivery reports in a timely manner will facilitate informed programmatic decision making.

Deliverables: Essential indictors from periodic service delivery and programmatic surveys will be available to improve malaria control service delivery

SDM 3.2.1: Coordinate and conduct representative population surveys according to SME plan

Situation: Demographic and health survey that usually include a malaria indicator survey module **(**TDHS-MIS) and stand-alone MIS aim to ascertain the progress of malaria control by monitoring parasite and anemia prevalence in under five children and the main programmatic outcomes. TDHS-MIS are conducted after every five years while stand-alone MIS are performed just in between. The results of the surveys are used to set strategic plan targets and to monitor the progress towards their achievement. The National Bureau of Statistics (NBS) is the delegated authority endorsed to plan, collect, analyses and disseminate the data.

NMCP is coordinating and leading the implementation of school malaria parasitological survey (SMPS) that provides malaria council representative parasitaemia prevalence of public primary school children aged 5- 16 years countrywide. Its statistical power is able to inform malaria prevalence up to sub council levels and is a basis for monitoring and updating malaria stratification. It is conducted biennially (last one conducted in 2019).

Geo coded prevalence data points from the two surveys are incorporated, together with other prevalence data from research institutions and other partners, into the national parasite prevalence database that is used to generate updated high definition malaria risk maps (and trends) starting from 1990[19]. This geo-spatial model is also providing reference data for the ward level micro-stratification.

Policy guidance: According to the ending malaria supplementary plan and SME plan; malaria prevalence among children under-fives and school age children is the overarching goal for the program to inform its progress towards malaria elimination.

Strategic direction: Program will continue to collaborate with NBS to conduct DHS - MIS and will continue to undertake SMPS after every two years.

Deliverables: The two periodic national representative surveys (TDHS-MIS and SMPS) will generate impact and outcome indicators to monitor malaria control interventions.

Output Indicator: Number of TDHS-MIS and SMPS conducted.

SDM 3.2.2: Strengthen longitudinal vigilance of malaria parasitaemia in sentinel population: pregnant women at ANC

[19] NMCP, Inform, Kemri. Epidemiological Profile of Malaria and its control. 2013

Situation: Longitudinal studies of malaria parasitaemia in sentinel population (pregnant women) are conducted to determine the prevalence of malaria in the group and guide informed interventions. Malaria prevalence among pregnant women is captured on monthly basis through HMIS/DHIS in all health facilities providing ANC services. ANC positivity rate is among the indicators used for Regional, council and ward based micro stratification.

Policy guidance: WHO through GTS document recommends routine monitoring of malaria parasites for early detection of infection to eliminate all parasites from humans.

Strategic direction: NMCP will continue to monitor malaria parasitaemia in pregnant women to continuously monitor the impact of malaria initiatives, generate indicators for micro stratification at sub district level and guide policies.

Deliverables: Pregnant women tested for malaria during their first ANC attendance.

Output Indicator: Proportion of pregnant women tested for malaria parasite during first ANC visits.

SDM 3.2.3: Conduct standard antimalarial Therapeutic Efficacy Study (TES) in sentinel sites as per WHO standard protocol

Situation: The NMCP and its implementing partners has been conducting TES to monitor the efficacy and safety of recommended antimalarial drugs among children of 6 months to 10 years. This include; measures of clinical and parasitological efficacy, differentiate recrudescence from new infection and evaluate incidence and severity of adverse effects. In addition, molecular markers associated with tolerance/resistance is ascertained. Currently there are eight country representative sentinel sites which are monitored for two years; four sites each year. TES is coordinated by NMCP and implemented by five partner institutions namely; MUHAS, IHI, KCMC, CUHAS and NIMR.

Rationale: TES has been an informative tool for drug change policy in the country.

Policy guidance: WHO Global technical strategy for malaria 2016-2030 recommends continued performing of antimalarial drugs therapeutic efficacy to detect unexpected adverse events and reduced efficacy to guide policy change.

Strategic direction: NMCP will continue to coordinate the implementation of TES.

Deliverables: Anti-malarial therapeutic efficacy profile will guide the selection of the recommended first line antimalarial.

Output Indicator: Number of anti-malarial therapeutic efficacy studies conducted annually.

SDM 3.2.4: Strengthen longitudinal monitoring of mosquito population dynamics in the sentinel sites

Situation: A total of 62 sentinel districts have been identified for Malaria Vector Surveillance (MVS) representing all mainland Tanzania regions (at least two councils from each region). Every sentinel district is expected to avail monthly mosquito samples totaling twelve per year. However; samples are collected by NMCP in collaboration with PO-RALG and implementing partner institution (NIMR Muheza) on quarterly basis. Analysis of the submitted samples is conducted at NIMR Muheza and report is submitted to NMCP.

Rationale: The Entomological Inoculation Rate (EIR) indicator is the overarching goal to monitor the performance of the current Malaria Strategic Plan (2021 - 2025).

Policy guidance: WHO through Global Technical Strategy (GTS) document recommends routine collection of impact and coverage indicators for malaria vector control within the national surveillance systems including all transmission settings including malaria free areas.

Strategic direction: NMCP will continue to conduct Malaria Vector Surveillance in collaboration with implementing institutions.

Deliverables: Entomological Inoculation Rate (EIR) generated by the national representative entomological surveillance will be used to monitor the intensity of malaria transmission in all epidemiological strata.

Output Indicator: Proportion of sentinel districts with monthly mosquito samples submitted to NIMR during the reporting period.

SDM 3.2.5: Strengthen longitudinal monitoring of efficacy and effectiveness of insecticides in national representative sentinel sites

Situation: A total of 28 sentinel sites have been identified in the country to monitor Insecticide Susceptibility Testing (IST). This activity is conducted by NIMR - Muheza / Mwanza to provide NMCP with information on the efficacy of insecticides used in LLINs and IRS.

Policy guidance: WHO through GTS document recommends routine collection impact and coverage indicators for malaria vector control within the national surveillance systems including all transmission settings including malaria free areas.

Strategic direction: NMCP will continue to collaborate with partner institutions to monitor insecticide susceptibility in the country.

Deliverables: Insecticide Susceptibility Test outcomes from the national representative sites will monitor the degree of insecticide resistance to guide the selection of insecticides for IRS according to the national plan for insecticide resistance mitigation.

Output Indicator: Proportion of sentinel sites submitting all reports according to plan.

SDM 3.2.6: Coordinate the collection, analysis, interpretation and use of the programmatic monitoring of vector control initiatives (including LLINs, IRS and LSM) data.

Situation: Monitoring of vector control initiatives is conducted to assess effectiveness and facilitate vector control planning. Data of distribution of LLINs to pregnant women, under five years' children and school children is collected via HMIS, BEMIS systems. IRS and LSM data is obtaining through monthly RHMT reports.

Policy guidance: WHO through its Guidelines for laboratory and field-testing of long-lasting insecticidal nets (2013) and Test procedures for Insecticide resistance monitoring in malaria vector control (June 2018) recommends programmatic monitoring of malaria vector control initiatives for informed policy.

Strategic direction: NMCP will continue to collect, analyze and use vector control information for informed decision.

Deliverables: Bio-assay studies will be used to monitor the effectiveness of indoor malaria vector performances of IRS and LLIN.

Output Indicator: Number of bio-assay studies conducted annually.

SDM 3.2.7: Establish capacity for malaria related molecular surveillance for programmatic monitoring of parasites and vector dynamics

Situation: Currently, there is limited evidence on the status of HRP2 gene deletions and antimalarial resistance markers (SP, ACT) in the country.

Rationale: Capacity for malaria related molecular surveillance will enable the country to do the following analyses: Resistance markers for antimalarial drugs, Parasite density and speciation, Parasite genotype (migration, importation), Gene deletion and Hematological parameters. This analysis will inform the country on refining its policy on the type of diagnostic tests and antimalarial drugs recommended.

Policy guidance: WHO-GMP through its response plan to pfhrp2 gene deletion (2019) advice countries to use existing avenues to monitor presence of gene deletions. The NGMDT&PT indicate a list of markers to be monitored including hrpt2/3 gene deletion, SP and ACT resistance markers, parasite genetics dynamics, parasite speciation, hematological parameters.

Strategic direction: Availability of routine dried blood spots (DBS) from school surveys and therapeutic efficacy studies will enable NMCP and its partner institutions to conduct such analysis.

Deliverables: Capacity for malaria related molecular surveillance for programmatic monitoring of parasites and vector dynamics will be established using appropriate and up to date technical options (e.g. sequencing).

Output Indicator: Surveys performed using in-country processed molecular data.

SA 3.3 Malaria Strategic Information system

Table 31: Malaria strategic information system strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
3.3	Strengthen a comprehensive malaria strategic information system to generate knowledge for evidence-based planning and decision making at all levels	Continuous availability of uninterrupted interactive web-based system providing routine and non-routine malaria information	1	2019	NMCP	1	1
	Malaria Strategic Information System and Knowledge Management Service Delivery Mechanisms						
3.3.1	Conduct a comprehensive periodic stratification of malaria transmission risk in all councils for improved targeting of interventions						
3.3.2	Strengthen malaria data management capacity and the national repository arrangements to enable evidence-based decision making at all levels						
3.3.3	Undertake periodic malaria program reviews and evaluation of the implementation of malaria strategic plan						
3.3.4	Create conducive environment for continuous collaboration with research, academia institutions and research capacities at subnational levels to facilitate evidence based decision making at all levels.						

Situation: There are two main sources of malaria data in the country. Routine (health facility) and non-routine (surveys and programmatic activities). Routine data is reported on monthly basis through HMIS/DHIS2. Within DHIS2; there is a dedicated interactive dashboard for malaria which provides different outputs (charts, graphs, tables and maps). These outputs cover all service areas where malaria information is delivered/provided. Non-routine data include surveys (SMPS, TES, IST, MVS) and programmatic activities (SNP, MRC, IRS, CBS, LSM and supportive supervisions) Non-routine data is captured through a composite database for malaria. This database is currently operated offline though, negotiation is underway with M&E and ICT at the MoHCDGEC to provide space and sub-domain at the national server to host it online.

Policy guidance: WHO and consultative expert meeting recommends triangulation of all available malaria information to facilitate analysis of trends, stratification, allocation of resources allocation and informed decisions

Rationale: Managing and use of routine and non-routine information for evidence-based decision making requires strong system to facilitate efficient allocation of resources at all health care delivery levels.

Strategic direction: Availability of reliable data triangulated from repository database and the national DHIS2. The two systems are expected to have an interface so that data can be triangulated for micro-planning, micro-stratification and facilitation of other informed decisions. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 31. SDM indicators and targets are described in Annex 4.

Deliverables: the malaria strategic information system to generate knowledge for evidence-based planning and decision making will be strengthened by using interactive web-based platforms

SDM 3.3.1: Conduct a comprehensive periodic stratification of malaria transmission risk in all councils for improved targeting of interventions

Situation: NMCP started implementing stratification of malaria burden by council in 2018 and updated it in 2020. This approach was adopted to enable targeting interventions and fasten reduction of the malaria burden in the country. In 2020 the country started to develop the methodology to reach sub-council level micro-stratification.

Policy guidance: WHO recommends stratifying malaria interventions according to risk. This is well elaborated in the Global Technical Strategy (GTS) and High Burden and High Impact (HBHI) documents.

Strategic direction: Tanzania will continue to monitor councils and wards malaria risk. This will facilitate efficient use of limited resources and fasten reduction of malaria prevalence towards elimination by 2030 as stipulated in the GTS. Malaria risk strata maps will be updated after every three years at mid and end time of NMSP to define strategic targets and assign recommended interventions. Every year the status of the council malaria risk will be updated to monitor the progress towards the achievements of the set targets.

Deliverables: All councils will be able to generate sub-district malaria risk micro stratification maps, interpret them and plan evidence based targeted malaria interventions.

Output Indicator: Proportion of councils able to generate micro stratification maps, interpret them and plan evidence based targeted malaria intervention.

SDM 3.3.2: Strengthen malaria data management capacity and the national repository arrangements to enable evidence-based decision making at all levels

Situation: It has been a longstanding challenge at NMCP on obtaining non-routine data. Availability of non-routine data has been limited to individual computers/laptops and/or institutions. Hence, its availability relies on which information is required and which institutions owns it. There have been data rights issues including not sharing before publication. To address this, NMCP developed a composite database which collects all non-routine information through different forms depending on the services rendered. Institution which is delivering particular service is the one which is responsible to enter their data. Data required is at aggregated level which still provides a room for implementing institution to share data without sharing its raw data. Unfortunately, the system still works offline due to some operational challenges (server, subdomain) which are being addressed by NMCP, M&E section and ICT at the MoHCDGEC.

Rationale: Availability of malaria repository database to capture all non-routine malaria information is key towards effective and efficiency use of malaria data from all possible sources for decision making.

Policy guidance: The SME plan recommend availability of malaria repository database to capture all non-routine malaria information.

Strategic direction: Establishment of repository malaria database with interactive dashboard is expected to enhance NMCP capacity with readily available outputs. This include charts, maps, graphs, tables and implementation report. Triangulation of these information will accelerate efforts on data use for better programmatic direction.

Deliverables: The national malaria data repository system will enable evidence-based decision making at all levels by using the functional web-based NMCP composite database and NMCP-DHIS2 interactive dashboard. The M&E system for the innovative interventions will be included in the strategic information framework.

Output Indicator: Availability of updated and functional web-based NMCP composite database and DHIS2 interactive dashboard able to accommodate malaria indicators for all malaria interventions including the new ones.

SDM 3.3.3: Undertake periodic malaria program reviews and evaluation of the implementation of malaria strategic plan

Situation: Malaria Program Performance Reviews (MPR) and Medium Term Review (MTR) are conducted periodically to assess the performance of the program in between and after every end of the Strategic Plan. The purpose is facilitate ascertaining actual performances, challenges

experienced and recommendations. MPR and MTR reports have been used to update malaria NMCP strategies and objectives during the development of the Strategic Plans. The last MPR was conducted in February 2020.

Policy guidance: WHO recommends routine reviews of malaria programs for monitoring analysis of trends to guide informed policy direction.

Strategic Directions: NMCP will continue to conduct MPR and MTR to guide informed strategies and policy direction.

Deliverables: Malaria program review will be conducted at the mid-term point in 2023 and at the end point in 2025 to evaluate the implementation of malaria strategic plan.

Output Indicator: MPR and MTR reports availability.

SDM 3.3.4: Create conducive environment for continuous collaboration with research, academia institutions and research capacities at subnational levels to facilitate evidence based decision making at all levels.

Situation: Coordination of NMCP and research/academia institutions to identify and implement malaria research agenda is limited. This frequently leads to less involvement of key NMCP persons on the relevant expertise area. Also at Regional and Council level there is limited use of data as RMFP and DMFP do not conduct operational research to determine the causes of the observed disease burden trends within their respective regions and councils.

Rationale: To enhance NMCP involvement and being informed on malaria research priorities; it is critical to have a focal point to coordinate all operational activities implemented by both NMCP and partner institutions

Policy guidance: WHO recommendations inform the NMCP together with the findings of implementation operational researches.

Strategic direction: Identification of malaria priorities facilitates translation and dissemination of its findings which in turn support evidence-based decision making.

Deliverables: Regions and councils will be able to identify malaria related risk factors in the respective areas and to plan appropriate interventions according to the findings.

Output Indicator: Proportion of operational research conducted as per SME plan.

Malaria Commodities and Logistic Management Strategy

Commodities and Logistic Management (CLM) Outline

Table 32: C&LM strategic objective and approaches

	Strategic Objective
4	**Maintain timely availability of safe and quality malaria commodities and supplies at the delivery points.**
	Strategic Approach (SA)
4.1	**Promote partnership to ensure malaria commodities are available in all service delivery points in the right amount and when needed**
4.2	**Promote partnership to ensure that all malaria commodities used at service delivery points are quality assured**
4.3	**Promote partnership to ensure that all malaria commodities used at service delivery points are safe**

CLM Background

Situation: Over the last decade, investments made by the Government of Tanzania (GoT) through the Ministry of Health, Community Development, Gender, Elderly, and Children (MoHCDGEC), development and implementing partners toward strengthening the public health supply chains had a positive impact on the health and well-being of Tanzanians due to improved availability of safe and quality assured malaria commodities. In the last 5 years (2015-2019) an impressive amount of commodities were procured, stored, and distributed to end users for malaria case management and prevention: over 70.9 million ACT treatment for the public sector, 20.9 million subsidized ACT for the private sector, 107.2 million malaria RDT, 10 million Artesunate injection, 90 million ITN, 2.5 tons of insecticides for IRS. All commodities procured through public system were quality assured and its safety monitored by regulatory authorities.

Rationale: Consistent availability of safe and quality assured malaria commodities and supplies at all delivery points is essential to improve the access to quality health services. The uninterrupted availability of safe, quality assured essential commodities in the service delivery points is a combination of different factors: a) Accurate selection, quantification, and procurement system; b) Strong inventory and logistics management practices from warehousing to distribution; c) Appropriate data management through reinforced data culture use for decision making; d) Strengthened workforce, infrastructure, planning process, e) Robust regulatory authorities able to monitor quality and safety of the products and f) Adequate financing.

Policy guidance: The HSSP-V advocates for improving governance, accountability, and sense of ownership of health commodities supply chain across all levels to eliminate occurrence of stock-out and malpractices (including pilferage) which prevent ordinary citizens to access better health services. Integrated logistics management has been introduced in early 2000s' to improve supplies in public health system and is coordinated by the PSU of the MoHCDGEC. Adherence to safety and quality standards requirements are regulated by the respective delegated authorities for medicines, medical devices (TMDA) and insecticides (TPRI). The strategic objective and its strategic approaches are summarized in Table 32.

Strategic direction: Provide continuous supply chain through improved management (quantification, forecasting, supply plan preparation, procurement, inventory management and monitoring) of quality assured and safe malaria commodities for prevention and control.

Deliverables: Timely availability of safe and quality malaria commodities and supplies at the delivery points.

SA 4.1 Procurement and Supply Management

Table 33: PSM strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
4.1	Promote partnership to ensure malaria commodities are available in all service delivery points in the right amount and when needed	Proportion of facilities/points of care receiving deliveries within the specified time	NA	2019	eLMIS	95%	100%
	Procurement Service Delivery Mechanisms						
4.1.1.	Carry out annual quantification and gap analysis for all malaria commodities and supplies						
4.1.2	Properly conduct procurement of malaria commodities and supplies by promoting conducive partnership to						
4.1.3	Enhance supply chain of medicines, diagnostics, insecticide treated materials, insecticides and larvicides, from point of entry/supplier to service delivery point.						
4.1.4	Enhance logistic management of medicines, diagnostics and other malaria commodities within the health care facilities including dispensing.						

Situation: In 2019, availability of essential malaria commodities (ALu, mRDT, SP) in health facilities was consistently above 95% according to the tracer medicine reporting within the malaria interactive DHIS2 dashboard. The same system includes an accountability tool to monitor ALu treatment dispensing and ITN issuing practices. Currently implementing partners conducting IRS operations make sure that insecticides and equipment are available in the service delivery points when needed. Biolarviciding logistic management is performed through the routine council system of good storage and issuing practices.

Policy guidance: The national guidelines for malaria diagnosis, treatment and preventive therapies 2020 identified commodities for Malaria diagnosis and treatment include pharmaceuticals, equipment and supplies. National guidelines for Integrated Vector control 2015 and insecticide resistance monitoring and management plan 2016 recommends: LLIN, Insecticide classes to be rotated (organophosphate and nicotinoids) for IRS and bio-larvicides (Bti and Bs).

Strategic direction: Management procedures such as quantification, preparation of supply plan, ordering, distribution, storage, inventory control, prescribing, dispensing, use and reporting must be strictly followed as prescribed in all levels to ensure continuously supply and these commodities should be used based on the guidelines to maximize their rational use. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 33. SDM indicators and targets are described in Annex 4.

Deliverables: Malaria commodities are available in all service delivery points in the right amount and when needed.

SDM 4.1.1: Carry out annual quantification and gap analysis for all malaria commodities and supplies

Situation: Dedicated malaria commodities comprehensive annual quantification has been introduced in 2007 and since then conducted without interruption. The process has been coordinated by NMCP and perfumed in collaboration with both government implementing partners (PSU, MSD, PO-RALG, NBS, and TMA.) and development partners (PMI contractors, Swiss TPH). More recently the PSU guided all stakeholders to address a bottom up quantification approach based on health care facility consumption data.

Rationale: The success of health care system is highly dependent on the availability of adequate health commodities. Several factors are contributing to the continuous availability of commodities. Among them a) Proper assumptions and consistent and reliable data for conducting to proper estimation of quantity of commodities and supplies required for a given period.

Policy guidance: Consumption based bottom up quantification is the preferred method for maintaining adequate commodities in the country. In public health facilities data from the electronic logistics management system (eLMIS) supports the implementation of consumption-based bottom up quantification to achieve consistency and rational supply of health commodities including other agreed approaches.

Strategic direction: Annual quantification for malaria commodities for both vector control and malaria case management is conducted to meet the need of public and private sector in the country.

Deliverables: a) Annual gap analysis, b) Annual quantification report, c) Supply plan including annual pipelines and anticipated shipments.

Output Indicator: Updated report with programmatic gap analysis, quantification for malaria commodities and supply plan.

SDM 4.1.2: Properly conduct procurement of malaria commodities and supplies by promoting conducive partnership

Situation: NMCP and partners has established, with assistance from donors and implementing partner, a well-functioning procurement system for malaria commodities which ensures continuous supply of efficacious and good quality commodities up to the service delivery points. More details are provided in the sections below for every single product. The description of the procurement process is included into the *strategic approach implementation mechanisms* section.

Rationale: Procurement is an important activity in ensuring that correct products are available in-country and ready for distribution when needed. It can be done from international, regional, or local sources of supply, or may use a procurement agent. During this process adherence to national procurement regulations and procedures must be properly followed to ensure an open and transparent process.

Policy guidance: The Tanzania development vision 2025 emphasize the implementation of bulk procurement strategy for economy of scale, sustainable and cost effective operations. The Procurement Act (2011) provides the regulatory framework and the formalities to conduct properly the process of procurement for the government entities.

Strategic direction: Build on available procurement modalities to ensure smooth procurement procedures and continuous availability of safe, efficacious and quality malaria commodities.

Deliverables: Annual updated and monitored supply and shipment plan and procurement orders timely submitted to procurement agents.

Output Indicator: Proportion of commodities procurement orders initiated in the reporting period according to supply plan.

Treatment of uncomplicated malaria

Situation: Since 2001, 190 million treatments of ALu has been procured in public sector. In the last two years (2018 and 2019) the procurement of ALu has been reduced from 13 to an average of 10 million per year.

Rationale: Procurement of antimalarial medicine for treatment of uncomplicated malaria (artemisinin combination therapy) aim to ensure uninterrupted supply of this commodity to delivery points to improve the patient's accessibility to a lifesaving medicine.

Policy guidance: The treatment of choice for uncomplicated malaria stipulated by the NGMDT&PT (2020) is ALu. Mechanisms are in place to assess its efficacy and to initiate the process of changing first line treatment after evidence of failure below 90% of efficacy.

Strategic Direction: During the implementation of this NMSP emphasis on use of domestic resources for procurement of ALu will be done. Strategies for containment of Artemisinin resistance should be established with rotation of alternative ACT's.

Deliverables: Considering wastage and pipeline, 26,239,650 blisters of ALu are expected to be procured in the NMSP period for public HF and other delivery system, of which in the first phase (2021-2023), Additional 17,438,654 subsidized treatments are expected to be procured for the private sector through the CPM. Additional 163,224 ACT will be procured for refugees. See programmatic gap analysis below.

Output Indicator: Proportion of healthcare facilities reporting no stocks of ALu.

Programmatic Gap	Needs 2021	Needs 2022	Needs 2023	Needs 2024	Needs 2025
ALU public facilities (# of treatments)	6,843,240	9,394,530	10,001,880	9,856,693	9,751,222
Subsidized ACT for private facilities (# of treatments)	5,492,118	5,973,268	5,973,268	5,973,268	5,901,589
ALU for vulnerable groups and special situations (# of treatments)	12,300	12,300	12,300	12,300	12,300
ACT for facilities in refugees camps (# of treatments)	60,528	54,408	48,288	42,168	36,048

Programmatic gap main assumptions 98% of the cases will be confirmed and only 2% will be clinical diagnosed between 2021-and 2024, and only 1.2% of cases will be clinical diagnosed in 2025. Each case will receive 1 dose of antimalarial. For CPM Assuming 40% of clients seek treatment in private health facility hence the public needs estimated to be 60%.

Preventive Therapies

Situation: Since 2001 in initiation of SP for preventive therapies SP tablets have been procured in public sector. In the last five years (2015-2019) the regular procurement of SP increased, improving its availability in HF from 95.5% to 98%. This is also reflected in improved HF performances in delivering IPTp services (see 2.3.1).

Rationale: Uninterrupted supply of antimalarials for preventive therapies improve access to services and more protection to vulnerable populations at risk of malaria infection and its complication.

Policy guidance: The medicine of choice for preventive therapies for IPTp (and IPTi) is SP as stipulated by the NGMDT&PT 2020. For other risk population the guidelines recommend alternative ACTs.

Strategic direction: During the implementation of this NMSP emphasis on use of domestic resources for procurement of SP will be maintained as in the previous periods.

Deliverables: 138,462,034 and 7,125,585 SP tablets are expected to be procured in the NMSP period (2021-2025) for IPTp and IPTi respectively, of which 80,370,500 tablets for IPTp and 4,076,725 for IPTi in the first phase (2021-2023). Additional 19,107,855 (of which 9,453,136 in the first phase) recommended antimalarials treatments are expected to be procured as preventive therapies for identified population at risks. For SMC 1,173,340 and 2,851,973 SP/AQ treatments in the first phase and in all NMSP period respectively. The total ALu and Primaquine treatments for ACD are expected to be 33,061 in the first three years and 64,719 in the entire strategic plan period. Furthermore, 29,526 preventive ACT treatments will be procured for sickle cell patients and 1,034,189 are expected to be used for MDA in the first three years.

Output Indicator: Proportion of healthcare facilities reporting no stocks of SP.

Programmatic Gap	Needs 2021	Needs 2022	Needs 2023	Needs 2024	Needs 2025
SP for IPTp (tablets)	25,550,600	26,777,400	28,042,500	28,361,005	29,730,530
SP for IPTi (tablets)	1,182,287	1,214,527	1,679,911	1,290,883	1,757,977
Antimalarials for High risk group	1,758,917	3,052,702	4,641,517	4,763,818	4,890,901
Antimalarials for SMC	-	361,048	812,292	830,142	848,491
Re-ACD AL	1,936	2,257	2,664	4,946	5,146
Re-ACD Primaquine	1,936	2,257	2,664	4,946	5,146
Primaquine in very low stratum health facilities	26,948	107,322	111,821	116,540	121,489
AL Pro-ACD	944	968	993	1,019	1,046
Primaquine Pro-active CBS	944	968	993	1,019	1,046
ACT for focal MDA	47,185	55,005	64,947	120,556	125,425
Sickle cell preventive therapy	9,600	9,840	10,086	10,338	10,597
MDA for complex emergencies and refugees	383,506	344,730	305,953	267,177	228,401
Vulnerability DP	384,000	384,000	384,000	384,000	384,000

Diagnostics

Situation: Since 2007, 150 million mRDTs have been procured in public sector. In the last two years (2018 and 2019) the procurement of mRDT has been increased to cover more testing from an average of 21.3 M per year to an average of 30.5M per year.

Rationale: Procurement of this commodity enhance its availability to Malaria suspected to get parasitological confirmation of diagnosis with rapid diagnostic test (RDT) before antimalarial treatment and avoid treatment based on clinical grounds due to its stock out.

Policy guidance: Is among the diagnostic test as stipulated by NGMDT&PT together with microscopy.

Strategic direction: During the implementation of this NMSP emphasis on use of domestic resources for procurement of mRDT will be done.

Deliverables: 159,945,229 malaria rapid diagnostic tests are expected to be procured in the NMSP period for public health facilities, of which 91,768,268 in the first phase (2021-2023) for all testing needs (passive and active case detection).

Output Indicator: Proportion of healthcare facilities reporting no stocks of mRDT.

Programmatic Gap	Needs 2021	Needs 2022	Needs 2023	Needs 2024	Needs 2025
mRDT for routine testing in public sector health facilities: # of tests	30,186,600	27,787,150	29,361,175	29,380,926	30,883,941
mRDT for increasing test rate in low transmission regions in public sector health facilities: # of tests	3,030,368	3,083,139	3,156,597	3,232,339	3,310,438
mRDT for routine testing in health facilities in refugees camps # of tests	569,676	512,076	454,476	396,876	339,276
RDT for vulnerable and special groups # of tests	35,000	35,000	35,000	35,000	35,000
mRDT for re-ACD in very low malaria stratum	37,957	45,133	53,290	98,918	102,913
mRDT for pro-ACD in very low malaria stratum	37,748	38,729	39,738	40,775	41,840
Microscopy consumables (# of smears)	1,548,562	1,434,445	1,676,087	1,576,373	1,824,976
Procurement of PCR reagents and consumables	TBD	TBD	TBD	TBD	TBD
Programmatic gap main assumptions: 95% of the suspects will be confirmed by RDT and 5% will be confirmed by microscope. All first ANC pregnant women will be tested using RDT.					

Treatment of Severe Malaria

Situation: Since its initiation for use in treatment of severe malaria 12 million vials of Artesunate injection has been procured in public sector. In the last two years (2018 and 2019) the procurement of Artesunate has been reduced due to better supply chain and stock management and decreased number of severe malaria cases admitted in HF.

Rationale: Procurement of antimalarial medicine for treatment of severe malaria (Artesunate) aim to ensure uninterrupted supply to this commodity to delivery points, improve its availability to patients to prevent mortality.

Policy guidance: The treatment of choice for severe malaria stipulated by NGMDT&PT is Artesunate.

Strategic direction: During the implementation of this MSP emphasis on use of domestic resources for procurement of Artesunate will be done.

Deliverables: 7,573.206 Artesunate injectable vials are expected to be procured in the NMSP period for public HF, of which 4,620,086 In the first phase (2021-2023) for admitted patients and pre-referral treatment.

Output Indicator: Proportion of healthcare facilities reporting no stocks of Artesunate injection.

Programmatic Gap	Needs 2021	Needs 2022	Needs 2023	Needs 2024	Needs 2025
Total Artesunate inj. Vials	1,436,643	1,681,533	1,501,910	1,506,961	1,446,160
Total Quinine inj. Amps	78,711	75,878	73,045	70,212	67,379
Total Artemether inj. vials	34,983	33,724	32,465	31,205	29,946
Rectal Artesunate	7,004	5,160	3,317	1,473	1,248

Programmatic gap main assumptions 95% of severe malaria patients will use Artesunate injection with approximately of 6 vials per case.

LLIN

Situation: Between 2015 and 2020, a total of 47,382,746 nets were procured for distribution through different channels (RCH, MRC, and SNP) in order to scale up ITN ownership and access to at least 80% coverage as national target.

Policy guidance: The country target recommends population access to a LLINs to be at least 80% which is measured by proportion of households' population with an access to an LLIN within their household (assuming one ITNs for every two people in a household). Currently there is a wide spread of insecticides resistance (metabolic resistance against pyrethroids).

Strategic direction: According to Supplementary Malaria Midterm Strategic Plan (2018-2020) and Insecticide treated Nets (ITN) plan (2016-2020)-draft, require procurement of nets in order to ensure universal access of LLINs to the population at risk according to the transmission settings. Also continue procurement of PBOs nets for mitigation of resistance in areas with evidence of metabolic insecticides resistance.

Deliverables: 33,769,987 and 58,632,562 LLIN, of which 21,133,882 and 39,465,817 PBO, will be procured in 3 and 5 years respectively.

Output Indicator: Proportion of healthcare facilities reporting no stocks of LLIN.

Programmatic Gap	Needs 2021	Needs 2022	Needs 2023	Needs 2024	Needs 2025
ANC standard LLIN	667,783	687,184	707,188	727,815	749,087
ANC PBO nets	1,804,924	1,864,765	1,926,722	1,990,872	2,057,299
EPI standard LLIN	661,335	680,183	699,603	719,612	740,231
EPI PBO nets	1,536,535	1,587,345	1,639,947	1,694,408	1,750,799
CTC standard LLIN	171,759	214,699	214,699	335,467	419,334
CTC PBO net	332,416	415,519	415,519	649,249	811,561
Under 5 admitted for malaria and anaemia standard LLIN	16,621	17,091	17,575	18,074	18,589
Under 5 admission for malaria and anaemia PBO net	197,067	203,495	210,147	217,031	224,155
Elderly standard LLIN	28,011	28,869	29,755	30,671	31,617
Elderly PBO net	69,449	71,808	74,252	76,785	79,410
SNP standard LLIN	680,305	647,370	628,370	694,871	646,103
SNP PBO net	4,017,628	3,823,127	3,710,921	4,103,651	3,815,647
Targeted replacement standard LLIN	222,581	227,540	229,719	252,651	260,496
Targeted replacement PBO net	795,802	796,606	797,751	873,200	873,887
Buffer standard LLIN	244,840	250,294	252,691	277,916	286,546
Buffer PBO	875,382	876,267	877,526	960,520	961,276

Programmatic gap main assumptions: All ANC first visit pregnant mothers and infants receiving MR1 vaccine will receive 1 LLIN. All new CTC attendees will receive 1 LLIN. All elders with 60+ years attending HF in moderate and high burden areas will receive LLIN, under five discharged due to severe malaria or severe anemia with exception to whom received MR1 around that time will receive 1 LLIN. All risk group In moderate and high malaria strata where the coverage will be below 40% will receive LLIN through targeted distribution

LSM

Situation: Since 2018 a total of 328,360 liters of bio-larvicides have been procured and distributed, and biolarviciding implemented in all 184 councils in mainland Tanzania. Procurement of bio-larvicides was done both centrally and through Local Government authorities and being implemented at the community level under supervisions of RHMTs and CHMTs.

Rationale: Bio-larviciding implementation is a supplementary Malaria vector control intervention aimed at reducing larval density and ultimately reduce and interrupt malaria transmission. Larviciding is potentially an effective tool in addition to LLINs and IRS since it attacks both indoor and outdoor biting (*An.arabiensis* or secondary malaria vectors), which are less anthropophilic and sustain low malaria transmission.

Policy guidance: Larviciding implemented as supplementary to the core vector control intervention and should not be used as stand-alone intervention.

Strategic direction: Larviciding through use of biolarviciding will be implemented in all Malaria transmission and operational strata (urban, very low, low, moderate and high). Approaches for biolarviciding application will differ according to the epidemiological strata; In very low malaria transmission strata done through foci investigation, while in low malaria transmission stratum, through Malaria prevalence/incidences data from the health facilities. Furthermore, in moderate and high malaria transmission strata it is guided by rainfall-season pattern and malaria incidence data from the health facility and in urban setting through blanket application and community engagement. Councils will be required to set budget in their council comprehensive health plan for procurement of bio-larvicides, sprayer pumps and PPE.

Deliverables: 2,213,136 and 3,688,561 lt. of bio-larvicides (bacillus sphericus and bacillus turigiensis) are expected to be procured in the 2021-2023 and 2021-2025 respectively.

Output Indicator: Proportion of bio larviciding received out of the anticipated in supply plan.

Programmatic Gap	Needs 2021	Needs 2022	Needs 2023	Needs 2024	Needs 2025
Procurement of larviciding (lts)	819,299	1,638,599	2,457,898	2,457,898	2,457,898

Programmatic gap main assumptions: At least each eligible village with identified breeding site will conduct two cycles of larviciding in unimodal rainfall pattern and three cycle in bimodal rainfall pattern per year.

IRS

Situation: Since 2007 different classes of insecticides has been procured for IRS intervention (parathyroid, carbamates, organophosphate and nicotine based). A total of 1,480,026 liters of insecticides were procured through PMI/USAID for IRS implementation at lake zone.

Rationale: To prevent malaria epidemics and reduce and interrupt malaria transmission in high malaria prevalence strata among risk population.

Policy guidance: IRS recommended in area with high malaria transmission to rapidly reducing vector transmission capacity and malaria incidence and also to interrupt malaria transmission by reducing vector survivorship density and human- vector contact. 2021- 2025 direction: IRS will be Implemented in area with Malaria prevalence of above 30%, to rapidly interrupt malaria transmission and sustained by LLINs distributions through SNP, RCH and CTC. According to the stratification, 69 councils are eligible for IRS because are at high malaria strata, the available resources from PMI sufficiency to cover only 6 councils including 3 refugee's camps. Mobilization of domestic resource is required, to make sure that all 63 councils receive IRS.

Deliverables: Approximately 3.3 million lt. od Organophosphate and 2.9 Million Kg Neonicotinoid insecticides are expected to be procured between 2021 and 2023 (and projected to be 6.4 million lt. and 5.9 million kg in 2021-2025 for the two insecticide classes).

Output Indicator: Proportion of insecticides received out of the anticipated in supply plan.

Programmatic Gap	Needs 2021	Needs 2022	Needs 2023	Needs 2024	Needs 2025
Targeted IRS Pyrimphos bottles 833 mls	184,209	342,624	467,664	472,909	489,209
Targeted IRS Nenicotinoid sachet 50 gr	204,594	380,541	519,417	531,187	543,348
Focal IRS Pyrimphos bottles 833 mls	103,563	106,488	149,745	169,113	169,113
Focal IRS Nenicotinoid sachet 50 gr	103,563	106,488	149,745	169,113	169,113

Programmatic gap main assumptions 61 high burden councils will conduct IRS, 6 under PMI and another 6 under GF with 2 years interval rotation of two insecticide to prevent insecticide resistance

SDM 4.1.3: Enhance supply chain of medicines, diagnostics, insecticide treated materials, insecticides and larvicides from point of entry/supplier to service delivery point.

Vector Control Commodities

Situation: Insecticide clearance, receiving, quality check, storage and redistribution to delivery points is currently provided by IRS implementing partner. LLIN supply chain is currently managed by MSD for public health facilities and contractors for SNP. Bio larvicides supply chain is currently managed by PO-RALG.

Rationale: An efficient supply system is essential to intensify controls of movements of malaria commodities for vector control from procurement to delivery points through close follow-up to make sure that the commodities procured are distributed, available and accessible for use by the targeted people at the service delivery points.

Policy guidance: The country need to develop an appropriate comprehensive insecticide/larvicides management plan as a tool to guide procurement and logistics of vector control commodities. The relevant regulatory authority, under the ministry of agriculture, is the TPRI.

Strategic direction: To scale up the envisaged community based IRS, it is needed to establish an appropriate insecticide supply chain from port of entry to service delivery point. It is essential to include in the process: a) Creating internal and external controls to address pilferages: b) Establish insecticide tracking; c) Prevent and take action on unethical practices and d) provide safety measure for transportation. Insecticide management

plan and structure in place and functional pesticide distribution information system should be in place to regulate the supply chain of insecticides and larvicides.

Deliverables: All vector control commodities procured (see 4.1.2) are timely and safely delivered to the point of service.

Output Indicator: Proportion of insecticides and bio-larvicides received and delivered by delegated logistic authority (MSD, contractors) according to the pesticide management plan.

Medicines, medical supplies and diagnostics

Situation: Since 2008 to date, Tanzania have shifted medicines delivery system from a central 'push' kit system to a decentralized 'pull' Integrated Logistics System (ILS) has improved medicines accountability and deliveries of commodities is directly to the end point. MSD is currently managing all the supply chain process for case management commodities including clearance, receiving, quality check, storage and distribution to health facilities. There has been inconsistency of the information of commodities which reported to be distributed by MSD and the one reported to be received and used by delivery points which require a closely follow up to all levels to verify for its consistency and correctness of the reported information.

Rationale: To improve commodity availability by delivering on time and in full and accountability. To intensify controls of malaria commodities from procurement to delivery points through closely follow-up to make sure that the commodities procured and distributed are available and accessible for use by the targeted people in the health facilities.

Policy guidance: Performs a wide range of functions to provide support and to promote the constant availability of the supplies that are needed to serve the clients at facilities.

Strategic direction: Accurate and timely planning and demand forecasting, accurate order generation and timely delivery of commodities at delivery points hence reduced stock out.

Deliverables: Creating internal and external controls to address pilferages: a) scale up health commodities tracking; b) prevent and take action on unethical practices.

Output Indicator: Fill rate of requested malaria commodities and supplies.

SDM 4.1.4: Enhance logistic management of medicines, diagnostics and other malaria commodities within the health care facilities including dispensing

Situation: In 2019 MSDQI is showing 56% of health facilities is currently providing quality assured logistic data management among the assessed health facilities using MSDQI logistic checklist. MSDQI is also showing that 3/4 of health facilities are currently delivering good dispensing practices

Rationale: Malaria commodity accountability needs proper logistics arrangements and good data quality management according to the set standards. Good dispensing practices ensure an effective form of the correct medicine is delivered to the right patient, in the correct dosage and quantity, with clear instructions, and in a package that maintains the potency of the medicine. Dispensing must be performed accurately and should be done in an orderly manner. Care should be taken to read labels accurately. The dispenser must count and measure carefully and guard against contamination of medicines by using clean equipment and never allowing skin contact with the medicines.

Policy guidance: In Tanzania the minimum standard of adequate storage facilities and their management are stipulated by the PSU of the MoHCDGEC (ILS Manual). The logistic management information system includes; a) Store ledger; b) Invoices; c) Issue vouchers; d) Requesting and requesting form; e) Dispensing register; f) Dispensing summary report. Health facility staff should dispense malaria commodities to the patients/clients in accordance to the good dispensing practices stipulated in ILS manual to avoid misuse. Good records keeping is essential part of dispensing to facilitate good management and monitoring of services provided.

Strategic direction: Continuous assessment of health facility storage and logistics management including data quality will continue to be assessed through MSDQI. Continuous monitoring of good dispensing practice performance to ensure safety checking before issuing medicines to patients, all stock movement is authorized and both incoming and outgoing stock matches documentation. Also inventory records should be periodically verified.

Deliverables: Continuous assessment of good practices for appropriate storage and logistics management through MSDQI and development of improvement plans. Monitor commodities accountability and acting upon through the accountability tool within the strategic malaria information system in DHIS2.

Output Indicator: Proportion of facilities assessed on logistic management scoring 75% and above.

SA 4.2 Quality Control and Quality Assurance

Table 34: QA strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025

4.2	Promote partnership to ensure that all malaria commodities used at service delivery points are quality assured	Proportion of commodities batches tested at port of entry and post market surveillance with quality assurance certification	100%	2019	TMDA, TPRI, TBS	100%	100%
	Commodities Quality Assurance Service Delivery Mechanisms						
4.2.1	To strengthen commodities quality check for commodities for vector control and case management						
4.2.2	Post Market surveillance for antimalarial medicines and malaria testing devices						
4.2.3	Post Market surveillance for vector control commodities, LLIN, insecticides and larvicides						

Situation: MSD is regularly sending samples of received batches of mRDT and medicines to TMDA and NRL. All batches tested in 2018 and 2019 received the approval for distribution. Post market surveillance of medicines is monitored by TMDA and reported regularly. In Jul-Sep 2019, 109 samples of different batches of antimalarials (including SP, Artesunate and ALu) were collected from MSD, public and private outlets, 90 of them were tested by TMDA and all of them complied.

Rationale: Tanzania quality policy aims to promote and protect the public against hazards associated with use of counterfeit, falsified and substandard products through product evaluation, registration and monitoring. Quality assurance involves all processes from the manufacturer to the end user to ensure quality products are supplied to both public and private sector through pre shipment quality check for commodities which require pre shipment inspection, port of entry quality check and post market surveillances which is additional measure of assuring the quality of medicines by Regulators following marketing authorization and as a way of detecting falsified medicines circulating on the market.

Policy guidance: The health policy, (2020 draft) requires that medicines and health commodities supply system is efficient, transparent, sustainable and adhering to national and international quality standards and enhance capacity building to organs for quality control of medicine and health products. MSD will send to TMDA and NHLQA/QC all batches of medicine and devices to be tested. NMCP will receive a copy of the released certificates. Post marketing surveillance testing will be performed and results shared to NMCP by the relevant regulatory authorities: TMDA for medicines and devices and TPRI for insecticides and biolarviciding.

Strategic direction: Malaria commodity quality control will go on to ensure the public is protected from hazards associated with use of counterfeit, falsified and substandard products through product evaluation, registration and monitoring and quality check at pre shipment, port of entry and at point of delivery through post market surveillance. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 34. SDM and targets are described in Annex 4.

Deliverables: Malaria commodities used at service delivery points are quality assured.

SDM 4.2.1: To strengthen commodities quality check for commodities for vector control and case management

Situation: Currently delegated authorities are playing an important role in promoting and protecting the public against hazards associated with the use of falsified, counterfeit and substandard health products. Medicines and medical devices are regulated by the Tanzania Medicines and Medical Devices Authority (TMDA), an executive agency under the MoHCDGEC. TMDA is responsible for regulating safety, quality and effectiveness of medicines, medical devices and diagnostics. Pesticides registration, monitoring and use are delegated to the Tropical Pesticide Research Institute that is responsible for a) doing evaluation of the technical information, labels for safe use instructions submitted by registrants to ensure safety to human and animal health and the natural environment; b) Coordinating bio-efficacy testing of pesticides to their intended purposes (for the control of pests/diseases) under local geographical conditions; and c) Approving, endorse and officially publish pesticides in the gazette for public access and use under existing legal committees and procedures.

Rationale; The existence of a significant number of porous borders makes a country vulnerable to the infiltration of falsified, counterfeit and substandard medicines posing a serious danger to the success of public health. There is a need to have a This situation justifies establishment of a comprehensive and sustainable quality control testing system.

Policy guidance: TMDA main responsibility is stated in the Health policy, 2017 draft and its mandate is stipulated in the Tanzania food, drugs and cosmetics act (TFDCA) cap. 219. Tropical Pesticides Research Institute (TPRI) is regulated by the Parliament Act No. 18 of 1979. The Institute conducts research in tropical pests affecting plants, livestock and human health.

Strategic direction: Strengthen quality control system of all malaria commodities.

Deliverables: Port of entry quality check for malaria commodities for vector control and case management is strengthened.

Output Indicator: Proportion of malaria commodities batches passed the port of entry quality check.

SDM 4.2.2: Post Market surveillance for antimalarial medicines and malaria testing devices

Situation: The Tanzania Medicine and Medical Devices Authority (TMDA) quality laboratory was established under the Tanzania Food, Drugs and Cosmetics Act, to carry out the analysis of food, medicines, cosmetics, diagnostics, and medical devices. The laboratory, WHO prequalified and ISO accredited, is equipped with ultra-modern equipment. The generated quality control results are important in ensuring that the Authority makes evidence-based regulatory decisions during marketing authorization. TMDA has been conducting Post Marketing Surveillance Program (PMS) of medical devices and In vitro diagnostics (IVDs) since 2012. The first PMS Program was implemented between year 2012 to 2014 and the second PMS Program from 2015 to 2018. The later program which was to be implemented until 2018 ended unexpectedly in 2017 due to unavailability of samples of identified devices in the market.

Policy guidance: Quality assurance guidelines have been developed by TMDA.

Strategic direction: Strengthen quality control system quality.

Deliverables: Quality of malaria medicine and testing devices available in the delivery points is assured.

Output Indicator: Proportion of medicine and testing devices that passed the quality check in post market surveillance reports.

SDM 4.2.3: Post Market surveillance for vector control commodities: LLIN, insecticides and larvicides

Situation: Quality and durability of LLIN is currently not consistently monitored in the country

Rationale: With use bed nets accumulate holes that let mosquitoes pass through. Thus, a functional or useful net is one that is physically intact and has insecticidal protection. Controlled trials on the importance of holes on bed nets have concluded that whether treated or untreated, protection offered by bed nets decreases with increasing number of holes.

Policy guidance: WHO standard techniques will be used to evaluate the quality and durability of the net fabric and to assess the insecticide efficacy in the field to determine the useful life of LLINs in terms of insecticidal efficacy and durability in the selected sentinel districts across Tanzania.

Strategic direction: The information gathered will be useful in future planning of the net replacement strategies in an LLIN program in Tanzania and understanding the factors associated with the durability of LLIN products.

Deliverables: a) Determine insecticidal efficacy of LLINs by assessing mosquito mortality and knockdown through cone bioassays; b) Determine fabric integrity of LLINs through measuring holes and tears in the fabric; c) Assess washing habits and frequency of washing of LLINs by the householders and; d) Determine the impact of user habits, washing behavior, social economic status, house type and designs on the durability of LLINs.

Output Indicator: LLIN tested for durability and efficacy.

SA 4.3 Commodities safety

Table 35: Commodities safety strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
4.3	Promote partnership to ensure that all malaria commodities used at service delivery points are safe	Malaria commodities evaluated for safety and registered by delegated authorities		2019	TMDA Vigflow	TBD	TBD
	Commodities Safety Service Delivery Mechanisms						
4.3.1	Facilitate the relevant regulatory authorities (TMDA), to conduct passive pharmacovigilance for malaria medicine.						
4.3.2	Facilitate the relevant regulatory authorities (NIMR and TPRI), to conduct continuous evaluation of use practices and re–evaluation of potentially adverse effects to people and the environment						

Situation: Since the inception of pharmacovigilance in Tanzania (1993) there was an improvement in reporting as a result of different initiatives developed and implemented by the regulatory authority (TMDA, former TFDA). The main strategies used were: a) intensification of advocacy activities to educate the public on reporting of all suspected ADR; b) introduction and dissemination of ADR reporting mechanism in public health facilities; and 3) improvement of dedicated laboratory services at TMDA HQ and other TMDA zonal centers. In 2019, 49 ADR due to malaria medicine were reported and followed up by the authority.

Rationale: Pharmacovigilance aims to detect, assess, understand and prevent the adverse effects or any possible medicine and chemicals-related problems. Monitoring the adverse drug reactions (ADRs) is an important part of patient care with purpose of continuous evaluation of products safety and efficacy to make safer and more effective prevention and treatment available to patients.

Policy; Pharmacovigilance regulation brings in mandatory reporting of adverse drug reactions by marketing authorization holders (MAH), suppliers of medicines, public health program, health care workers and consumers. The regulations stipulate the requirements for good pharmacovigilance practices among all stakeholders. With the new regulations, manufacturers and other stakeholders are encouraged to employ qualified person for Pharmacovigilance who will assist to oversee, and advice on all issues related to Pharmacovigilance in the country.

Strategic direction: Increase awareness on adverse drug reactions at all levels of supply chain and the community through different methods. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 35. SDM indicators and targets are described in Annex 4.

Deliverables: All adverse reactions related to malaria commodities are reported, monitored, analyzed and re-acted upon.

SDM 4.3.1: Facilitate the relevant regulatory authorities, TMDA, to conduct passive pharmacovigilance for malaria medicine.

Situation: The national centre for ADRs monitoring is under the Tanzania medicines and medical devices authority (TMDA). The center collects and evaluates ADR reports and feedbacks its findings to the healthcare professionals and the general public. Reported information is also communicated to the World Health Organization (WHO). Four zonal drug information centers located at Muhimbli National Hospital, Bugando Medical Centre, Kilimanjaro Christian Medical Centre and Mbeya consultant hospitals are responsible with coordinating the collection of ADR reports at respective hospitals and Zones.

Rationale: All suspected adverse reactions should be reported whether known or unknown, serious or not, including minor ones. Reports on the new drugs are of great interest because they make easier to monitor the performance of these drugs in the country for any suspected adverse drug reactions.

Policy guidance: The ADR reporting is stipulated into the guidelines for surveillance of adverse events following immunization. All health care providers should report ADRs. All affected consumers are encouraged to report ADRs directly to their healthcare professionals and zonal drug Information centers. Suspected adverse reactions for drugs marketed in Tanzania should be reported using a standardized form which is postage pre-paid and self-adhesive. TMDA recently released alternative ADR reporting through web and mobile phone application. Medical devices vigilance system is stipulated by the guidelines on medical devices vigilance system, March 2016.

Strategic direction: Increase awareness on adverse drug reactions of health workers at all level and the community through different methods

Deliverables: Regular TMDA reports shared with NMCP and partners.

Output Indicator: Reported passive adverse events or interactions of antimalarial medicine.

SDM 4.3.2: Facilitate the relevant regulatory authorities (NIMR and TPRI), to conduct continuous evaluation of use practices and re–evaluation of potentially adverse effects to people and the environment

Situation: There is little coordination between NMCP and TPRI to monitor safety of insecticides and insecticides materials.

Policy; TPRI is the government institution delegated to provide continuous evaluation of use, practices and re–evaluation of potentially adverse effects to people and the environment.

Strategic direction: Strengthen communication between delegated authorities and malaria partners (NMCP and PO-RALG) to report adverse events related to insecticides and insecticides impregnated materials use.

Deliverables: Regular report from TPRI of re-evaluation of insecticide used in public health safety.

Output Indicator: Number of products for malaria vector control evaluated and re-evaluated for the safety profile.

Social Behavioral Change and Advocacy Strategy

Social Behavioral Change and Advocacy (SBC&A) Outline

Table 36: SBC&A strategic approaches

	Strategic Objective
5	**To strengthen an enabling environment where individuals at risk from malaria are empowered to protect themselves and their families from malaria and seek proper and timely malaria-treatment**
	Strategic Approach (SA)
5.1	**Reinforce and update knowledge and practice amongst all community members about appropriate malaria prevention, testing and treatment, promote desired positive behaviors and social norms about healthy behaviours**
5.2	**Maintain high knowledge and improve good practices amongst vulnerable groups with elevated risk of malaria infection so that they know about their specific risk, prevention and treatment options available to them.**

5.3	Encourage communities to utilize and implement community-based malaria control and elimination initiatives
5.4	Strengthen Public Private Partnership to maximize SBC efforts and ensure consistence in fight against malaria
5.5	Increase visibility for specific malaria campaigns to politicians, communities and general public so that malaria become an agenda and priority at all levels.

SBC&A Background

Situation: Implemented social and behavior change (SBC) activities through multiple approaches and channels have contributed to high knowledge and awareness on malaria in mainland Tanzania. Currently, general knowledge on malaria interventions is high and almost universal to above 90%. (MIS 2017). Exposure to malaria messages is also high especially through mass media approach and specifically radio both in urban and rural areas. Knowledge and exposure is a necessary to positive behavior change of individuals, households and communities. Apart from the high knowledge on malaria, actual behavior change is still as a little bit lagging behind, because behavior related indicators such as utilization of LLINs, treatment seeking and testing before treatment (although other factors contributes to reaching targets) have not reached the set target. Again there is still little proportion of parents/caretakers with children under five years old with fever in the last two weeks for whom advice or treatment was sought.

Strategic direction: The strategic direction for SBC is to sustain the high knowledge on malaria intervention, while increasing the coverage and intensity of community mobilization, engagement, and interpersonal communication so as to bring the actual/desired behavior change in the uptake of malaria interventions. The strategic objective and its strategic approaches are summarized in Table 36. SBC&A implications for different malaria risk strata are summarized in Table 37.

Deliverables: 85% of parents/caretakers with children under five years old with fever in the last two weeks will be able seek advice or treatment

Table 37: SBC&A strategy according to malaria risk strata

Malaria risk	Description
Very Low	In this stratum it is important to keep up the population knowledge on malaria signs and symptoms (with emphasis on signs of severe disease) and educate on the risk of acquiring malaria when travelling to endemic areas. Individuals and community should understand the importance of maintaining high level of LLIN use especially among the biological vulnerable because they are still at higher risk. Communities should also continue to be encouraged on early treatment seeking for febrile illness and explain that every fever will be tested. Active community participation in elimination activities, as indicated in case based surveillance, need to be reinforced.
Low	SBC should continue to encourage individuals and communities to ensure positive uptake of preventive interventions and early treatment seeking to receive correct and prompt malaria services. Population should be aware of their possible change to low immunity status due to the recent epidemiological transition. Service providers should be equipped with counseling skills to address concerns about fevers that increasingly test negative for malaria to avoid patient dissatisfaction and erosion of trust between patients and providers including patient mistrust on mRDTs
Moderate High	In moderate and high transmission SBC should continue to promote uptake of all recommended malaria interventions, including LLINs, (acceptance of IRS where is implemented), treatment seeking, test before treatment, adherence to test result, use of recommended ACTs and promote IPTp uptake. Focus should be on both individual and social change whereby the whole community is necessary to establish and maintain a culture of utilization of malaria interventions
Urban	SBC in urban settings should continue to promote on prevention using recommended methods. Promoting and encouraging urban community on LLINs ownership from alternative distribution means such us commercial mechanism is also important. Again, urban population should also be encouraged to personal protection with LLINs and discourage the use of non-treated LLINs that are more available in urban areas. Other specific SBC for other supplementary vector control mechanisms such LSM should also be encouraged. For malaria case management, focus should be to promote early treatment seeking, testing, adhering to test results and using recommended ACTs and advocacy to guidance to private sector to deliver quality and affordable diagnostic and treatment services in line with the national guidelines

SA 5.1 Malaria information, education and communication

Table 38: Malaria knowledge strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
5.1	Reinforce and update knowledge and practice amongst all community members about	Proportion of women with knowledge on measures to avoid malaria	87%	2017	MIS	90%	93%

	appropriate malaria prevention, testing and treatment, promote desired positive behaviors and social norms about healthy behaviours						

	Malaria IEC Service Delivery Mechanisms
5.1.1.	Improve capacity of healthcare workers to effectively provide accurate and relevant information to patients, pregnant women and caretakers of under-five on desired behaviors for malaria prevention and treatment
5.1.2	Improve capacity of community health workers to effectively provide accurate and relevant malaria information during their interaction with community members
5.1.3	Develop and implement mass media campaign with key target audience at different levels using different communication channels to maintain knowledge level and spark actions

Situation: General Knowledge about malaria is high and almost universal in Mainland Tanzania. The MIS 2017 shows that knowledge on malaria prevention is 98%. This high level of knowledge is due to increasing exposure to malaria messages through different approaches and channels, especially mass media (radio 78% as per MIS 2017).

Policy guidance: The national malaria communication guide (2015-2020) stipulates the importance of increasing and maintaining the high level of knowledge on malaria interventions that will influence individuals and communities to practice desired behaviors

Strategic direction: The focus of the SBC will build on pre-existing high knowledge, reinforce understanding of desired behaviors, and promote action through different approaches and channels e.g. mass media (radio, Television, print, social media) mid media, community mobilization/engagement, use of healthcare providers and malaria message delivery through school health programs. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 38. SDM indicators and targets are described in Annex 4.

Deliverables: 93% of women will be capacitated with knowledge on the measure to avoid malaria

SDM 5.1.1: Improve capacity of healthcare workers to effectively provide accurate and relevant information to patients, pregnant women and caretakers of under-five on desired behaviors for malaria prevention, testing and treatment

Situation: Healthcare workers are a crucial source of information during their regular interaction with clients. Currently 78% of the visited health facilities through MSDQI provide malaria messages to their clients through Healthcare workers (MSDQI report 2019). NMCP in collaboration with SBC partners trained IPCom skills to 120 Health providers from all councils of Simiyu region and 3 councils of Shinyanga region.

Rationale: Improved Interpersonal Communication of Health care providers will facilitate friendly service provision and delivery of malaria messages to clients hence improve uptake of malaria interventions. Providers are highly trusted by their clients and hence the messages they provide have high credibility.

Policy guidance: Malaria Communication guide 2015-2020 stipulates Healthcare workers as one among the main message delivery channels.

Strategic direction: Capacity building and improve Interpersonal Communication skills of Health care providers so that they communicate and give relevant malaria messages to their client.

Deliverables: 3200 Health care workers will be capacitated to provide accurate and relevant information to patients, pregnant women and caretakers of under-five on desired behaviors for malaria prevention, testing and treatment.

Output Indicator: Proportion of healthcare workers trained on providing SBC messages to clients.

SDM 5.1.2: Improve capacity of community health workers to effectively provide accurate and relevant malaria information during their interaction with community members

Situation: Currently NMCP in collaboration with SBC implementing partners have been able to build capacity of 1815 community health workers (CHWs) in 86 councils of 14 regions. These CHWs are sensitizing community members to utilize malaria interventions using different Interpersonal Communication (IPCom) approaches like household visits, group discussions/dialogues (women, youth group etc.), meetings, clinic talks and are located at the 1815 ward wards out of 6254 total wards in mainland Tanzania.

Policy guidance: The communication guide for malaria interventions stipulates the importance of Interpersonal Communication approach using Community Health Workers as an effective way for positive behavior change.

Strategic direction: CHWs will be oriented and continue to be used to deliver malaria messages through Interpersonal Communication Approach in regions with and without SBC implementing partners.

Deliverables: 3000 Community Health Workers will be capacitated to effectively provide accurate and relevant malaria information in their interaction with community members.

Output Indicator: Proportion of CHWs capacitated to implement Interpersonal Communication for Malaria interventions.

SDM 5.1.3: Develop and implement mass media campaign with key target audience at different levels using different communication channels to maintain knowledge level and spark actions

Situation: Currently media exposure to malaria messages is high to 84% (MIS 2017) whereby mass media (radio) leads among all other channels (71% MIS 2017).

Rationale: Mass media has the ability to reach a large number of people in a short space of time and hence helps to increase knowledge, promote social norms that favor malaria prevention and treatment seeking. E.g. radio has a wide coverage, and accessible to majority of people both in rural and urban Tanzania. Television, social media and print materials are also the fastest channels that reaches many at a time and they capture audience attention and interests.

Policy guidance: Communication Guide for malaria interventions stipulates mass media approach as a very useful approach in reaching many people at a time, creating/raising awareness and maintaining knowledge that trigger behavior change.

Strategic direction: Continuing with mass media approach to maintain level of knowledge and visibility of malaria interventions. NMCP will take advantage of radio popularity in Mainland Tanzania including national, regional and community radio stations in dissemination and providing malaria messages and information. Malaria messages will also be placed via social media which is now emerging and has a potential to be accessed by the majority to increase reach and exposure.

Deliverables: 85% of women reached with appropriate malaria messages through mass media.

Output Indicator: Proportion of women reached with appropriate malaria messages through mass media (TV, radio, printed materials & social media).

SA 5.2 Promote Malaria Services for Vulnerable groups

Table 39: SBC for vulnerable groups, strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
5.2	Maintain high knowledge and improve good practices amongst vulnerable groups with elevated risk of malaria infection so that they are aware about their specific risk, prevention and treatment options available to them.	Proportion of women 15-49 years who know pregnant women are at higher risk of getting malaria	93%	2017	MIS	94%	95%
	Reaching Vulnerable Community Service Delivery Mechanisms						
5.2.1	Develop and implement SBC outreach program for marginalized and disadvantaged vulnerable groups in all-malaria transmission areas						
5.2.2	Develop and implement school-based SBC programs to provide malaria messages						
5.2.3	Addressing potential gender-related barriers for uptake of malaria interventions at the household and community level						

Situation: Vulnerable groups to malaria are categorized in terms of biological and/or socio- economic vulnerability (see more details in Annex 5). Malaria messages targeting vulnerable groups have been delivered to communicate the importance of protecting pregnant women and children under-five using LLINs, LLINs delivery through RCH (*Chandarua Kliniki*), prevention of malaria in pregnancy and benefit of pregnant women to complete the dose of IPTp3+.

Policy guidance: The national malaria communication guide recommend that vulnerable groups needs to be reached with targeted messages and channels available in their areas to address their vulnerability and allow them to take appropriate actions. This groups

Strategic Direction: To continue with provision of malaria messages to vulnerable groups through relevant channels including healthcare providers and SBC outreach programs. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 39. SDM indicators and targets are described in Annex 4.

Deliverables: 95% of women aged 15-49 be Knowledgeable that pregnant women are at higher risk of getting malaria.

SDM 5.2.1: Develop and implement SBC outreach program for marginalized and disadvantaged vulnerable groups in all – malaria transmission areas

Situation: SBC outreach program are implemented in a form of mid media activities like community wide events, road-shows, mobile video unit shows and edutainment. Although the coverage of mid- media is still low, its importance lies on complementing messages that are delivered through the mass media and trigger conversation around key behavior in a way that make sense to the audiences. Groups in the lowest economic quintile and with the lowest education generally are more likely to face barriers to behavior change, including lower availability, accessibility and affordability of services and products, and less exposure to media. The same barriers apply to mobile populations such as nomadic groups and migrants and displaced populations, including refugees. In some circumstances, there is also a social barrier in terms of acceptability of getting and using services or products, or practicing the desired behavior.

Policy guidance: Communication guide for malaria interventions 2015- 2020 insist on targeting vulnerable groups with specific messages regarding their vulnerability using relevant channels to them such as interpersonal communication through health providers, print materials and targeted mid media.

Strategic direction: Strengthening SBC outreach programs to biological and socio-economic vulnerable groups such hard-to-reach, mobile populations and refugees in high-transmission areas.

Deliverables: 12,000 SBC outreach events for targeted populations conducted in high-transmission areas.

Output Indicator: Number of SBC outreach events for targeted populations conducted in high-transmission areas.

SDM 5.2.2: Develop and implement school based programs to provide malaria messages

Situation: Data from School Malaria Parasitological Surveys (SMPS) shows that there is a shift of burden of malaria transmission from under-five to school going children where malaria prevalence is more among older ages as compared to younger ages, and to boys as compared to girls. This bring a need of implementing malaria SBC programs for schools.

Policy Guidance: The training manual for school health program in Tanzania provides a standardized information, knowledge and action that aim to improve and/or protect the health and well-being of all pupil and therefore reduce health inequalities. The training manual has a component of malaria.

Strategic direction: Strategic direction will be to implement school based SBC interventions targeting school children and their teachers so that they can understand the importance of protecting themselves from malaria and also became a medium of delivering message to their parents/guardian.

Deliverables: 5000 schools will receive malaria SBC orientation to teachers and distributed with SBC materials.

Output Indicator: Proportion of schools whose teachers have been oriented on malaria SBC or pupils distributed with SBC materials.

SDM 5.2.3: Addressing potential gender-related barriers for uptake of malaria interventions at household level

Situation: Currently there are no much evidence on the effect of gender issues in the access and utilization of malaria services. However, it is possible that gender barriers can affect access to malaria interventions e.g. female headed household are more likely to be more disadvantageous in terms of income level that can affect them in seeking malaria services for themselves and their children.

Policy Guidance: The Health Sector Strategic Plan V (July 2021- June 2026) states that gender mainstreaming is a priority for the health and health-related sectors. Therefore, the Ministry of Health will enhance integration, monitoring and coordination of gender affirmative action within the health sector.

Strategic direction: The strategic direction will be to conduct gender assessment barriers in relation to access and utilization of malaria intervention and develop and disseminate messages that address those barriers accordingly.

Deliverables: Two (2) malaria-gender assessment/studies will be conducted.

Output Indicator: Number of malaria and gender assessment/studies conducted.

SA 5.3 Community engagement in Malaria prevention and care

Table 40: community engagement strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
5.3	Encourage communities to utilize and implement community-based malaria control and elimination initiatives	% of women who state that malaria is the most serious health risk in the community	57%	2017	MIS	60%	80%

	Community Engagement Service Delivery Mechanisms
5.3.1	Create an enabling environment to establish malaria community based intervention package that include promotion, LSM, CmCM and mCBS (including guideline, training package and M&E supervision systems).

Situation: Currently community based malaria control is more of promotion activities whereby community health workers (CHWs) are sensitizing community members to utilize malaria interventions using different interpersonal communication (IPCom) approaches like household visits, group discussions and dialogues (women, youth group etc.), meetings and clinic talks. CHWs implement SBC activities under CBOs/local NGOs found at the regional or council level and coordinated by Malaria Focal persons. A total of 39 CBOs/Local NGOs are implementing Malaria SBC activities in 86 Councils of 14 regions with high malaria prevalence where 1815 CHWs/CHVs are located at the ward level in the respective districts/councils. However, there is a gap in implementing community based malaria interventions as a package that include all malaria community based intervention e.g. community LSM and IRS, CmCM, and mCBS.

Rationale: Community based initiatives for malaria Control and elimination is an important prerequisite in reaching malaria elimination goals by 2030

Policy guidance: The national guideline for community based health services (2020) stipulates the use of volunteer CHWs who are owned by communities themselves to ensure community involvement and ownership in planning and management of community based health and social welfare activities in the country.

Strategic direction: The strategic direction will be to implement community based package for malaria interventions comprising promotion component, community LSM, community IRS, CmCM and mCBS. While for malaria promotion components the term CHWs will continues to be used, the other interventions namely LSM, mCBS, CmCM, the term CORPs (Community Owned Resource Person) will be used to refer community members that will be selected by community itself and are trusted to deliver targeted community activities e.g. retired healthcare workers/officers found in the community for the case of CmCM. For LSM, activities will include community-based larval source management to control immature stage of mosquitoes that would emerge to adult mosquitos and transmit malaria through (CORPs) who will identify and apply bio- larviciding at community in remote areas. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 40. SDM indicators and targets are described in Annex 4.

Deliverables: 80% of women will be capable to state that malaria is the most serious health risk in the community

SDM 5.3.1: Create an enabling environment to establish malaria community based intervention package (including guideline, training package and M&E supervision systems)

Situation: Currently there is training guide, malaria SBC tools for ward health officers & CHWs and data collections which are used for malaria SBC activities at the community level. However, there is no community based package that include all malaria interventions to be implemented at the community level.

Policy guidance: Specific thematic malaria surveillance (e.g. mCBS protocol and SOP), prevention (e.g. vector control guidelines and SOP), and care (diagnosis, treatment and preventive therapies guidelines and SOP) documents include recommendations and guidance for the implementation of community based malaria control and elimination initiatives and to ensure community involvement and ownership in both planning and management.

Strategic direction: NMCP in collaboration with PO-RALG and HEPS will create an enabling environment by putting in place all necessary malaria community based guidelines and tools that will enable smooth implementation of community based malaria initiative in a package of all malaria interventions.

Deliverables: 88 councils will be capable to implement promotional, vector control or malaria Community Case Management initiatives.

Output Indicator: Proportion of councils targeted for implementing promotional, vector control or malaria community case management initiatives.

SA 5.4 Public Private Partnership

Table 41: PPP strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
5.4	Strengthen Public Private Partnership to maximize SBC efforts and ensure consistence in fight against malaria	Proportion of private sector companies that invest in malaria (programmatic or financial) contribution to prevent and control malaria in the community	23%	2020	Report	40%	50%

	Public Private Partnership Service Delivery Mechanisms
5.4.1	Strengthen existing malaria SBC fora to ensure coordinated and harmonized implementation of the SBC strategy to all implementing partners at all levels including private sector

Situation: Private sector engagement in the fight against malaria can contribute to sustaining and increasing efforts in the implementation of interventions. NMCP in collaboration with partners initiated a Malaria Safe Initiative in 2012, where different private for profit companies joined in the malaria fight by protecting employees and their families from malaria, providing education and using their companies' platform to deliver malaria messages to the public.

Policy guidance: The HSSP V stipulates that partnerships in health and social welfare will help to achieve equitable, accessible and quality health and social welfare services, therefor the MoHCDGEC will put concrete measures in place to implement the PPP Policy.

Strategic direction: NMCP will revive and build on the experience of malaria safe initiative to establish End Malaria Council for domestic resource mobilization to close the existing funding gap in malaria. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 41. SDM indicators and targets are described in Annex 4.

Deliverables: 100 private sector companies will be motivated to invest and contribute either programmatic or financially in preventing and control malaria in the community.

SDM 5.4.1: Strengthen existing malaria SBC fora to ensure coordinated and harmonized implementation of the SBC strategy to all implementing partners at all levels including private sector.

Situation: NMCP disseminated Malaria communication guide to national level partners, regions and district malarial focal persons and key stakeholders. To oversee the implementation, TWG meetings were conducted on regular basis to review and agree on plans of activities, receive implementation progress and develop and review message and materials. NMCP also conducted harmonization exercise of SBC implementing partner's activities, approaches and area of coverage so as to avoid duplication of work, make best use of resources and assist NMCP to carry out coordination and monitoring of SBC activities in a very consistent way. NMCP also link to the Health Promotion Section for approval of all SBC messages and materials. For the private sector, NMCP in collaboration with partners, initiated a private sector initiative namely Malaria Safe Companies in 2012 which had four pillars namely protection, education, visibility and advocacy. Companies were able to engage in malaria control by protecting their employees (and their families) from malaria, by issuing them with LLINs and provide malaria education to their employees, and by using their company forums for visibility of malaria messages.

Policy guidance: Malaria communication guide outlines the function of the SBC task force and its roles of overseeing the implementation of SBC activities by adhering to the guideline. Furthermore, the government of Tanzania recognizes the role of private sector in bringing about socio-economic development in the country. In the National Public. Private Partnership (PPP) Policy, PPP have been identified as viable means to effectively addressing constraints of financing, management and maintenance of public goods and services and enable the government to fulfill its responsibilities in efficient and effective way (PPP policy 2009).

Strategic direction: Strategic direction will be to continue with coordination of SBCC activities including development and dissemination of Malaria Communication Guidelines to guide the implementation and harmonization of partners' efforts and activities for maximum impact. NMCP will also revive and build on the experience of malaria safe initiative to establish End Malaria Council for domestic resource mobilization to close the existing funding gap in malaria.

Deliverables: 20 SBC task force and harmonization meetings will be conducted.

Output Indicator: Number of SBC task force and harmonization meeting conducted.

SA 5.5 Advocacy

Table 42: Malaria advocacy strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
5.5	Increase visibility for specific malaria campaigns to politicians, communities and general public so that malaria become a priority agenda at all levels.	Percentage of women age 15-49 who have seen or heard malaria campaign messages in the past year.	84%	2020	MIS	86%	88%
	Malaria Advocacy Service Delivery Mechanisms						
5.5.1	Strengthening advocacy for malaria to high level leaders, influential people, regional and council leaders to raise the profile of malaria, get support and prioritization of malaria interventions at all levels						
5.5.2	Implement specific malaria campaigns to increase visibility						

Situation: Over the past years a number of malaria campaign have been implemented namely *Malaria Haikubaliki*, *Kabla Hujalala Chandarua ni Lazima*, *Sio Kila Homa ni Malaria*, *Naweza* and currently the ongoing campaign, Zero Malaria Starts with Me. Tanzania has joined an initiative of Malaria High Burden, High Impact (HBHI) and Eliminating malaria in SADC countries by 2030. All these campaign together with others that will emerge during the implementation period of this SP requires high visibility to make them known to the community/general public.

Rationale: Increasing visibility of malaria campaigns and interventions is an important contributor to raising malaria profile and uptake of interventions. More visibility means more people will learn how to prevent and seek treatment. Furthermore, greater visibility creates pressure on and accountability for policy makers to take more action through increasing funding and prioritize the malaria fight in the country's health and finance agenda.

Policy Guidance: The national strategy for health communication (2019-2024) recognizes and stipulate the importance of implementing health campaigns in different areas of priority to raise people's awareness, knowledge, attitude and practices and increase campaign visibility and gaining political support.

Strategic direction: Campaign visibility approaches, advocacy and sensitization will be implemented through multiple channels. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 42. SDM indicators and targets are described in Annex 4.

Deliverables: 88% of women age 15-49 will be reached with malaria campaign messages by seeing or hearing

SDM 5.5.1: Strengthening advocacy for malaria to high level leaders, influential, regional and council leaders to raise the profile of malaria, get support and prioritization of malaria interventions

Situation: NMCP in collaboration with SBC & advocacy partners have implemented advocacy activities targeting high level leaders including members of parliament to orient them on malaria intervention and malaria scorecard for accountability and action, so that they can have access to the tool through their personal devices, stay well informed on the malaria situation, take appropriate action and mobilize adequate support. NMCP also have been conducting advocacy meetings to regional and council leaders during specific campaigns such as LLINs distribution through different mechanisms.

Policy guidance: Malaria Communication guide instruct the importance of advocacy activities to create awareness, influence malaria policies, improving malaria funding, malaria resource mobilization and prioritization of malaria fund allocations at different levels of implementation and increased political will to raise malaria profile

Strategic direction: Advocacy activities will continue to be implemented in collaboration with relevant partners such as ALMA/TAPAMA and other implementing partners

Deliverables: 100 malaria advocacy meetings will be conducted at national, regional and council level.

Output Indicator: Number of advocacy meetings conducted at national, regional and council level.

SDM 5.5.2: Implement specific malaria campaigns to increase visibility

Situation: Branding of malaria campaign **(e**.g. Zero Malaria Starts with Me, Malaria High Burden, High Impact & Eliminating malaria in SADC countries by 2030) increases visibility and share malaria messages to majority of the target audience. In collaboration with SBC implementing partners, NMCP has been extensively involved in branding campaign messages through different channels including wall painting, rural sign boards, posters, banners and social media.

Policy guidance: The national strategy for health communication (2019-2024) and the NMCP communication guide (2020 draft) will be the guiding documents for the implementation of communication campaigns.

Strategic direction: Increase malaria campaign visibility through branding (including online branding through social media channels) and using media houses to reach a wider audience

Deliverables: 6000 of different campaign materials will be disseminated to the targeted audience,

Output Indicator: Number of campaign materials disseminated to the targeted audience.

Malaria Leadership, Partnership and Resource Mobilization Strategy

Leadership, Partnership and Resource Mobilization (LPR) Outline

Table 43: LP&R strategic approaches and Service Delivery Mechanisms

	Strategic Objective
6	**To strengthen efficient and effective coordination for implementation of malaria strategies through accountable partnership**
	Strategic Approach (SA)

6.1	**To provide effective leadership and governance for the implementation of malaria control and elimination interventions at all levels**
6.2	**Raise the profile of malaria amongst policy and decision makers at all levels so that national, regional and district plans include appropriate interventions and sufficient budget to implement the malaria strategic plan**
6.3	**Promote harmonized multi-sectoral approach and cross-border initiative for malaria control**

LP&R Background

Situation: The National Malaria Control Program (NMCP), is the focal point for planning, coordination, resource mobilization, and staff development for malaria control and elimination. According to HSSP IV mid-term evaluation, malaria has been one of the leading morbidity and mortality conditions especially for under five and pregnant women.

Policy guidance: Currently, NMCP, in collaboration with PO-RALG, formulates the strategies and coordinates the implementation of the recommended malaria control and elimination interventions in the country.

Strategic direction: NMCP in collaboration with PO-RALG, Development and Implementing Partners, will continue to facilitate effective and efficient implementation of malaria intervention through mobilization of resources, including domestic ones, to sustain the realized achievements and successes gained via engagement with community. The strategic objective and its strategic approaches are summarized in Table 43.

Deliverables: Coordinated implementation arrangements between NMCP, PO-RALG and partners to increase effectiveness and efficiency of malaria control interventions

SA 6.1 Partnership, Leadership and Guidance

Table 44: Partnership, leadership strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
6.1	To provide effective leadership and governance for the implementation of malaria control and elimination interventions at all levels	Program performance as rated over time, through periodic semiannual evaluation	A	2020	Evaluation report of PUDR	A+	A+
	Leadership Service Delivery Mechanism						
6.1.1.	Improve coordination and governance structures at all levels to strengthen coordination, communication, and close follow up of all malaria related interventions						
6.1.2	Strengthen and sustain the country with appropriate evidence based malaria control strategy, that will guide stakeholders and implementers towards the achievements of its goal						
6.1.3	Strengthen human resources capacity for effective strategic plan implementation at national and LGA levels						
6.1.4	Enhance well structured, coordinated and harmonized supervision and verification system involving implementing entities at various levels						

Situation: Two technical working groups, case management and vector control, with broad and competent representation, are established to provide technical guidance and recommendations to the NMCP management for the implementation of the strategic interventions in collaboration with the regional and local government authorities, with support from national and international implementing partners. The NMCP is directly answerable to the Directorate of Preventive Services, which, technically, reports to the senior MoHCDGEC management led by the Chief Medical Officer.

Policy guidance: The national health policy 2020 (draft) and HSSP V acknowledge the establishment of thematic disease committees to foster collaboration and comprehensive solution towards addressing existing setbacks.

Strategic direction: MoHCDGEC through NMCP in collaboration with PO-RALG will undertake a series of strategic supportive interventions to ensure that all malaria control and elimination activities are designed and implemented in line with the existing policy frameworks. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 44. SDM indicators and targets are described in Annex 4.

Deliverables: High level leadership, transparent governance and competent technical support to guide malaria control implementation at all levels in the country

SDM 6.1.1: Improve coordination and governance structures at all levels to strengthen coordination, communication, and close follow-up of all malaria related interventions

Situation: The previous strategic plan governance structures was quite dysfunctional with one malaria steering committees, two sub-committees for prevention and care respectively and four technical working groups (MCM, SBC, SME and IMVC). Over the past five years the steering committee met once (out of five expected meetings) and subcommittee met twice (out of 10 expected meetings). The TWGs, each one expected to meet quarterly, have met for a total of 14 times. However, a number of resolutions have been implemented in this period that have strengthened the implementation process of malaria interventions in the country. At Regional Secretariat and LGAs, RHMTs, CHMTs and HMTs, coordinate the implementation of malaria interventions at their respective levels.

Policy guidance: The HSSP V, the National Health Policy and the national malaria strategic plan will be the reference document to guide malaria control and elimination initiatives.

Strategic direction: The previous NMSP 2015 – 2020 governance structures has been simplified and restructured. During the implementation of this NMSP, NMCP will coordinate the technical working groups (TWGs). PO-RALG, bilateral and multilateral development partners, implementing agencies and research institutions representatives are actively participating in those meetings (see chapter 6). A number of task forces will be working under the TWGs. NMCP will provide the coordination of the meetings at national level and will conduct periodic zonal review meetings with regional and local government authorities to identify the implementation gaps and develop the resolutions for improvement. Also there will be in place a framework to track implementation of recommendations from meetings.

Deliverables: Appropriate and functional governance and coordination in place.

Output Indicator: Proportion of governance and technical meetings conducted as per plan.

SDM 6.1.2: Strengthen and sustain the country with appropriate evidence based malaria control and elimination strategy that will guide stakeholders and implementers towards the achievements of its goal

Situation: The NMCP has five thematic technical operational units that guide the implementations of the NMSP. Over the past decades, the program has developed and disseminated policy guidelines and SOPs that facilitate quality implementation of malaria control and elimination interventions in all levels.

Policy guidance: National malaria strategic plan 2015-2020, supplementary malaria strategic plan 2018-2020, malaria communication guide (2015 and 2020), malaria surveillance monitoring and evaluation plan (2015-2020), Malaria Surveillance and Response Guidelines (2017), Space Spraying Standard operating procedure- SOP (2016), bio-larviciding SOP (2016) integrated malaria vector control guideline (2016) environmental management SOP (2016), indoor residual spraying SOP (2016), long lasting insecticidal nets SOP (2016), national guideline for malaria diagnosis, treatment and preventive therapies (2020), mRDT Test accuracy and quality control SOP (2017), microscopy quality assurance and quality control SOP (2015), malaria service and data quality improvement manual (2017) and malaria partners' interventions oversight plan (2014).

Strategic directions: MoHCDGEC through NMCP in collaboration with PO-RALG and Partners will develop and update different technical guidelines and policy frameworks on thematic areas for malaria control in the country. Moreover, NMCP in collaboration with PO-RALG and Partners, will disseminate these documents to all relevant implementing entities and, hold sensitization meetings and provide trainings to regions and council health management teams.

Deliverables: Appropriate strategic and technical support will be provided by technically sound strategic approaches, clear guidelines and appropriate standard operating procedures

Output Indicator: Proportion of updated strategic and technical documents available.

SDM 6.1.3: Strengthen human resources capacity for effective strategic plan implementation at national and LGA levels

Situation: The NMCP has ties towards strengthening the implementation capacity of its core staff. The program has managed to raise its staffing level by 83%, at the end of 2019, by hiring specialized staff required as per program organogram. Also the program continues to implement on job capacity building on the aim of updating staff on the new technologies. Also, NMCP in collaboration with PO-RALG, has managed to ensure availability of malaria focal persons at regional and council levels. However, at PO-RALG HQ, malaria coordination unit, there is a limited technical staffing level to coordinate malaria related issues, to plan, monitor and supervise implementations at Regional Secretariat and LGAs.

Policy guidance: In order to implement effectively malaria control and elimination activities, there are three core documents to guide NMCP staff comprehensive capacity strengthening: a) NMCP staffing plan; b) Training needs assessment; and c) Continuous learning program. The staffing plan provides an objective analysis of staffing needs in terms of numbers of positions as well as skills-mix required for NMCP.

Strategic direction: NMCP will develop and update the three core documents mentioned above. The findings will be used to fill staffing gap, training of new staff including new MFPs and fund raising to support staff for relevant higher studies. Moreover, there will be initiatives to strengthen the malaria coordination unit at PO-RALG HQ with mixed skills personnel (pharmacist, laboratory technologists, statistician, vector control and monitoring & evaluation specialists) in order to improve its capacity to support malaria interventions across the RS and LGAs.

Deliverables: Qualified and competent technical staff will be available to support malaria control interventions at both NMCP and PO-RALG HQ.

Output Indicator: Proportion of NMCP and PO-RALG staffing level filled by government staff as indicated in the organograms.

SDM 6.1.4: Enhance well structured, coordinated and harmonized supervision and verification system involving implementing entities at various levels

Situation: The NMCP in collaboration with PO-RALG and partners, developed malaria supportive supervision guidelines and checklists from national to community levels. Moreover, NMCP in collaboration with PO-RALG oriented regional and council levels on the use for following up the effectiveness of malaria services and data quality.

Policy guidance: Under the HSSP V framework, NMCP has given the role to track and report the malaria control and elimination progress in the country. This has elicited the program to collaborate with other partners in monitoring and reporting malaria related indicators as shown in HSSP V.

Strategic directions: NMCP will continue to ensure that supervision by regional and district health management teams are conducted effectively and that the reports generated are accurate, complete, and timely. The NMCP in collaboration with PO-RALG and implementing partners will a) update and improve the supervision tools and checklists to be used by the regional and district teams during their supervision of health facilities, b) conduct training for district data managers and malaria focal persons and training on data management and proper reporting, c) work with regional and district authorities to ensure that there are sufficient resources in regional and district budgets for regular supervision visits, and d) focus NMCP supervision visits to the districts on verification of data and financial reports, as well as on capacity building of district staff.

Deliverables: Human resources skills for delivery of malaria services will be strengthen through effective supportive supervision at all levels of health care delivery system.

Output Indicator: Proportion of regions supervised by national level.

SA 6.2 Malaria policy and resource mobilization

Table 45: Policy strategic approach and its outcome indicators

	Strategic Approach		Baseline	Baseline Year	Source	Target 2023	Target 2025
6.2	Raise the profile of malaria amongst policy and decision makers at all levels so that national, regional and district plans include appropriate interventions and sufficient budget to implement the malaria strategic plan	Proportion of domestic funds allocated for malaria interventions.	NA	2020	Malaria Business Plan	25%	50%
	Policy and Resource Mobilization Service Delivery Mechanisms						
6.2.1	Strengthen the resource mobilization mechanisms for sustainable implementation of malaria strategies						
6.2.2	Sustain comprehensive business and operational plans for malaria control interventions						
6.2.3	Strengthen NMCP capacity to successfully implement planned malaria intervention at all levels						
6.2.4	Strengthen the malaria component of annual comprehensive council health plans						

Situation: Currently majority of malaria interventions are funded by development partners. Apart from the complete financial support for staff and infrastructures at all levels, the GoT is covering the costs for procurement of SP for IPTp, microscopy diagnosis, and for the implementation of larviciding.

Policy guidance: NMCP has developed a malaria resource mobilization plan (2015) that identify potential domestic and global resources for malaria control interventions and mechanisms to access these funds. This plan takes into account the sustainable resource mobilization for implementation of the NMSP 2021 - 2025.

Strategic directions: The NMSP 2021 - 2025 emphasize the increase of domestic funding for implementation of malaria interventions from central level. Regional secretariat, to LGAs through CCHP and health facility plan and budgeting guidelines. Furthermore, there will be series of advocacy interventions targeted at policy and decision-makers to translate the political commitment into tangible action plans and budgets e.g. increasing budget for malaria interventions with substantial funding gaps, e.g. LSM and IRS. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 45. SDM indicators and targets are described in Annex 4.

Deliverables: Adequate resources to implement evidence based malaria control interventions

SDM 6.2.1: Strengthen the resource mobilization mechanisms for sustainable implementation of malaria strategies

Situation: Currently the NMCP has a draft resource mobilization plan, developed for fund raising and advocacy for financial sustainability especially domestic funding.

Policy guidance: Malaria Resource Mobilization Plan identify potential domestic and global resources for malaria control interventions and mechanisms available to identify potential domestic and global resources for malaria control interventions and mechanisms to access these funds.

Strategic direction: NMCP will develop a Malaria Resource Mobilization Plan to identify potential domestic and global resources for malaria control interventions and mechanisms to access these funds. This plan will take into account the finding of the Financial Sustainability: This will be submitted for funding request/proposals to relevant government authorities, national and global institutions (E.g. GF, PMI, GoT and others), and the private sector to finance the implementation of the strategic plan.

Deliverables: Both domestic and global resources need to be available to implement evidence based malaria control interventions

Output Indicator: Updated resource mobilization plan available

SDM 6.2.2: Sustain comprehensive business and operational plans for malaria control interventions

Situation: Malaria control and elimination interventions are implemented basing on the operational plans and business plan

Policy guidance: The NMSP sets a framework for use of operational plans to define interventions, its timeframe and the related necessary financial resources.

Strategic Direction: The detailed costed a malaria business plan, with clear operational plans for each of the malaria control strategies will be timely updated every three years. These plans will form the basis of resource mobilization efforts. The business plan will inform about the needs, the funded interventions / activities and the gaps. The business plan is an essential tool for securing funds to fill the gaps and monitor implementations according to funds allocation and their timelines.

Deliverables: Updated and adhered upon three-year business plan and annual operational plans.

Output Indicator: Updated business and annual operational plan for malaria control interventions available.

SDM 6.2.3: Strengthen NMCP capacity to successfully implement planned malaria intervention at all levels

Situation: The capacity of NMCP to execute NMSP lies upon the commitment of both state and non-state actors towards implementation of the malaria control activities. There are strong ties with development and implementing partners.

Policy guidance: NMCP strategic plan and national health policy (2020 draft) set benchmark for collaborative efforts toward implementation of malaria control initiatives.

Strategic direction: In collaboration with technical partner, NMCP will organize short trainings for key staff. In collaboration with PO-RALG and other partners, NMCP will also coordinate and conduct trainings to regional to council level on the implementation, follow-up and reporting.

Deliverables: NMCP and PO-RALG will be capacitated to perform their respective tasks in a conducive environment.

Output Indicator: Adequate technical and logistic equipment in place according to the procurement plan.

SDM 6.2.4: Strengthen the malaria component of annual comprehensive council health plans

Situation: Malaria control strategies, interventions and activities are planned and budgeted at national level through NMCP and RALG level through RHMTs and CHMTs. There have been limited fund allocation through R/CCHPs for implementation of malaria interventions at council and community level. Therefore, some community based malaria preventive measures (e.g. larviciding and IRS) are not fully funded.

Policy guidance: According to this NMSP, councils are supposed to consolidate and expand indoor residual spraying and larviciding in epidemiologically and operationally suitable areas. Supplementary malaria strategic plan 2018 - 2020, put emphasis on malaria interventions to be owned and implemented by the community, according to risk of malaria transmission at sub-district level.

Strategic Direction: The MoHCDGEC / NMCP in collaboration with PO-RALG and partners will coordinate the training and advocacy meetings with RS and LGAs on the malaria interventions, planning, budgeting and report writing, so that they can be able to include malaria budget in their plans.

Deliverables: Councils enabled to conduct malaria control interventions through adequate resources.

Output Indicator: Proportion of CCHP with funded malaria component in line with the NMSP.

SA 6.3 Multi-sectoral and cross border

Table 46: Multi sectoral and cross border initiatives strategic approach and its outcome indicators

	Strategic Approach	Outcome indicator	Baseline	Baseline Year	Source	Target 2023	Target 2025
6.3	Promote harmonized multi-sectoral approach and cross-border initiative for malaria control and elimination	Proportion of regional/cross-border and multi-sectoral malaria initiatives implemented	1	2020	NMCP	1	1
	Cross Border and Multi-sectoral Collaboration Service Delivery Mechanism						
6.3.1	Customize GLMI / EAC & DRC strategic framework for cross border collaboration on malaria control						
6.3.2	Develop action plans with relevant Ministries outlining multi-sectoral malaria control intervention and targets						

Situation: The MoHCDGEC and other Ministries have set a cross border platform with Southern, East Africa and Great Lakes Malaria Initiative. The GoT has shown the great political will to combat malaria both internationally and nationally in political declarations, dialogues and advocacy. Currently in the country there is no coordinated multi-sectoral framework and integrated action plan.

Policy guidance: Regional network has a strategic framework for cross border collaboration (East Africa Community, GLMI, SADC) where Tanzania is a country member. This framework signed by country members, guides countries on the agreed implementation of interventions at border areas, for the aim of controlling imported cases.

Strategic Direction: Malaria control and elimination strategies in the country have been widen to cater for demand of epidemiological change and ensure proper implementation of malaria control and elimination initiatives. This implies a growing need to initiate an effective multi-sectoral collaboration platform and to develop coordinate cross border initiatives. The strategic approach, its indicator and targets, and the service delivery mechanisms (SDM) are summarized in Table 46. SDM indicators and targets are described in Annex 4.

Deliverables: Regional (EAC and SADC) and national frameworks to end malaria developed.

SDM 6.3.1: Customize GLMI / EAC & DRC strategic framework for cross border collaboration on malaria control

Situation: Tanzania through NMCP in collaboration with EAC & DRC / GLMI for cross border malaria control have developed a framework strategy, which has reaped progressive results that has set benchmark for moving malaria step ahead. These include; State Leaders and Ministries commitment towards resource mobilization, cross border risks control and medicine policies.

Policy guidance: The East African Community Regional Contingency Plan for Epidemics due to Communicable Diseases, conditions and other events of public health concern (2018-2023) addresses malaria as disease of priority among member states. Moreover, SADC member states has set an agreement to eliminate malaria through collaborative initiatives.

Strategic direction: The Ministry of Health / NMCP in collaboration with PO-RALG and partners will review and adopt strategic framework for regional collaboration on malaria control and cross-border issues (Transmission, insecticide resistance, leakage, and smuggled drugs and products such as LLIN). Also, there will be existence of evidence based cross country dialogues to facilitate harmonization of strategies towards malaria elimination.

Deliverables: Cross border action plan with clearly stipulated roles and responsibilities from countries.

Output Indicator: Regional cross border malaria control action plan available.

SDM 6.3.2: Develop action plans with relevant Ministries outlining multi-sectoral malaria control intervention and targets

Situation: Efforts towards malaria elimination requires multi sectoral initiatives in order to inspire and guide policy and executives' decision makers in all sectors to effectively implement coordinated malaria initiatives in the country.

Policy guidance: The UNDP multi-sectoral action framework for malaria acknowledges the need to set shared responsibilities to be addressed by different sectors.

Strategic direction: NMCP will work closely with other sectors which have direct bearing on malaria prevention and control and identify areas of collaboration, including state actors (office of the Vice President, NEMC, Ministry of Lands, Housing and Urban Development; Ministry of Agriculture; Ministry of Education; Ministry of Industries and Trade; Ministry of Natural Resources & Tourism; Ministry of Water and Livestock Development; and Ministry of Works) and non-state actors (private sector, civil society and professional organizations). The approach will emphasize complementarity, effectiveness and sustainability and will capitalize on the potential synergies to accelerate both social -economic development and malaria control. This will involve new interventions as well as putting new life into existing interventions and coordinating and

managing these in new and innovative ways. Where relevant and feasible, NMCP will assist the relevant ministries and institutions to jointly develop action plans outlining inter-sectoral malaria control interventions and targets.

Deliverables: Multi sectoral action plan with clearly stipulated roles and responsibilities to end malaria.

Output Indicator: National multi sectoral malaria control action plan available.

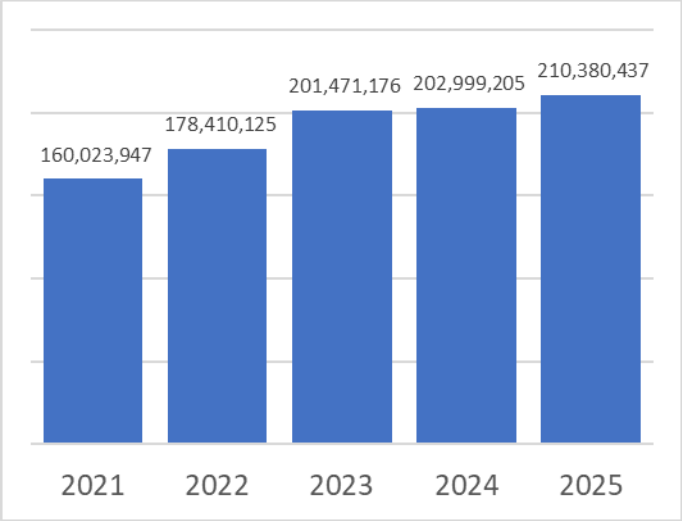
Cost of the NMSP

The needs

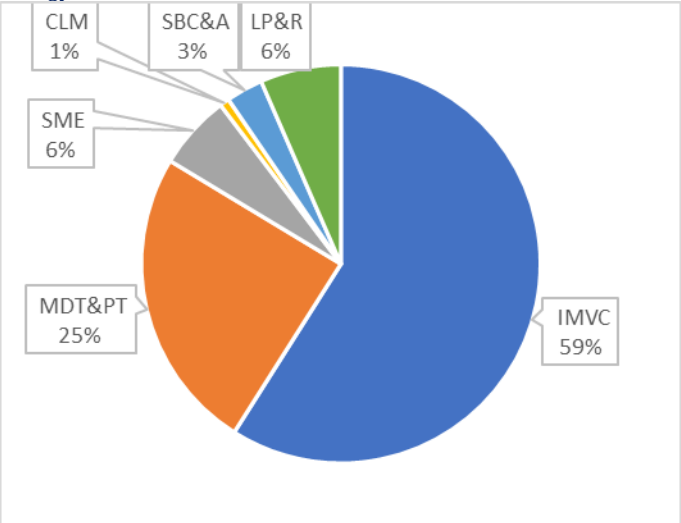
The strategy has been estimated to cost in the five years **953,284,890 $** with an average of **190,656,977.94 $** per year equivalent of approximately **3.2 $** per person per year. About 59% of the needs is allocated to malaria vector control interventions while case management and surveillance shares are 25% and 6% respectively (**Error! Reference source not found.**). The three remaining cross cutting interventions account for about 10%. Approximately two third of the expected costs are for commodities procurement and supply (47% vector control and 18% case management) while the remaining 35% is expected to cover operational costs. (Figure 23). Budget summary by Objective, Strategic approach and budget needs, anticipated funds and gaps by service delivery mechanisms for the periods 2021-2023 and 2021-2025 are presented as annexes 7, 8 and 9 respectively.

Figure 23: NMSP cost analysis of the needs by strategic approach

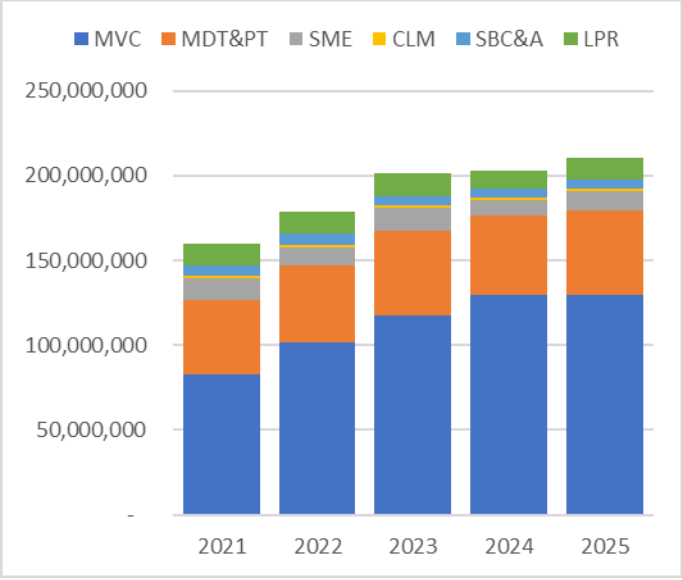
Total funds needed to implement the NMSP 2021-2025 by year (Millions USD



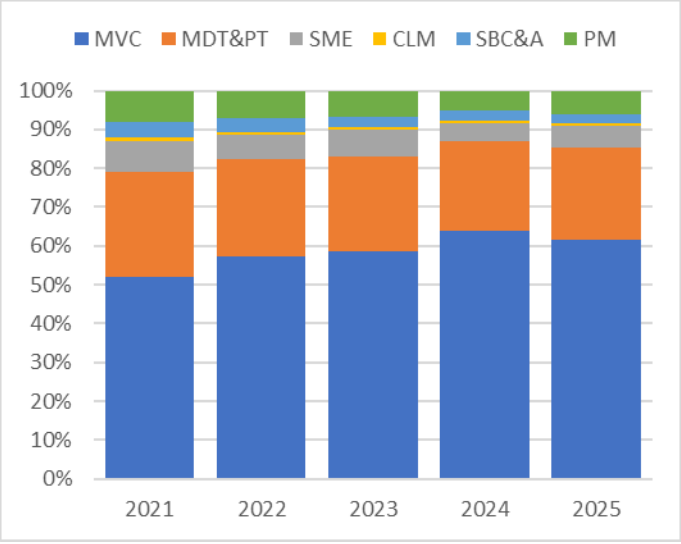
Proportion of funds needed to implement the NMSP 2021-2025 by strategy



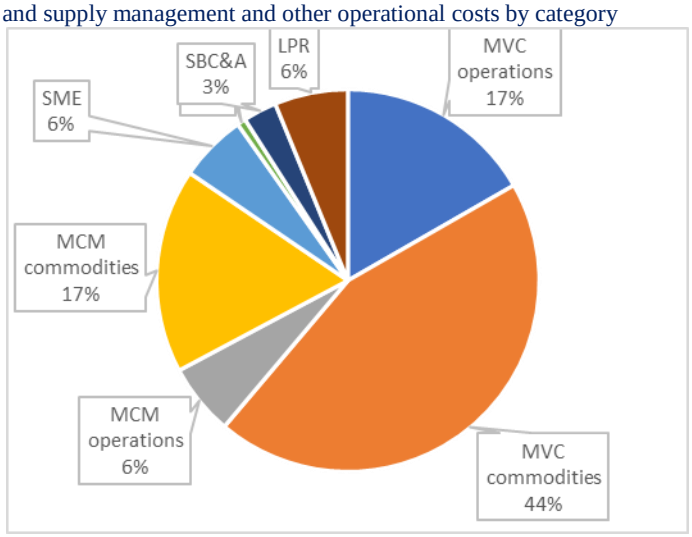
Total funds needed to implement the NMSP 2021-2025 by strategy by year (Millions USD)



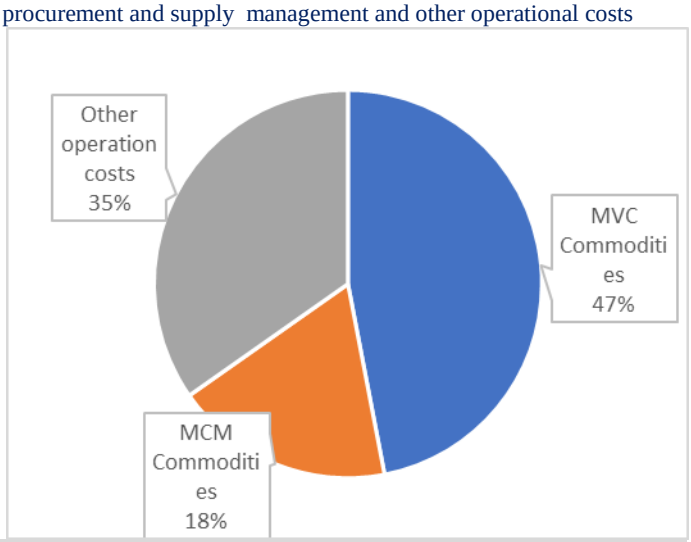
Proportion of funds needed to implement the NMSP 2021-2025 by strategy by year



Proportion of funds needed for the NMSP 2021-2025 by procurement and supply management and other operational costs by category



Proportion of funds needed to implement the NMSP 2021-2025 by procurement and supply management and other operational costs



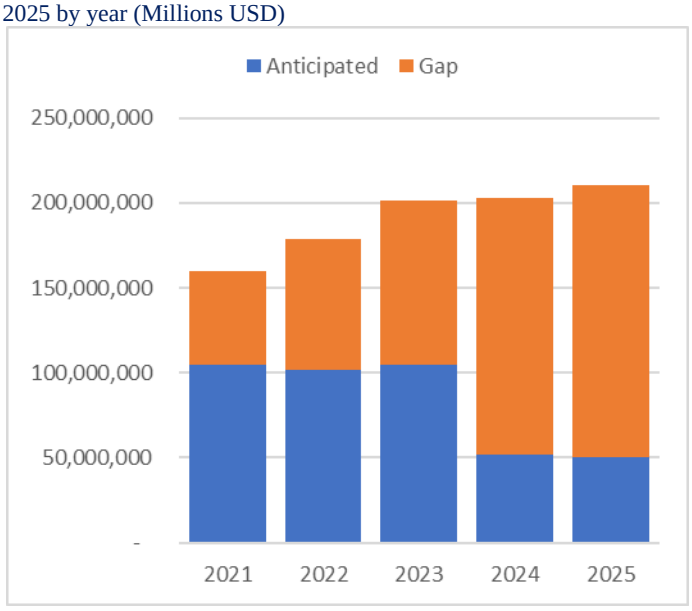
IMVC: Integrated Malaria Vevtor Control; MCM: Malaria CaseManagement; SME: Surveillance Monitpring & Evaluation; CLM: Commodities and Logistic Management; SBC: Social Behavioural Change; LP&R: Leadership, Partnership and Resource Mobilization; PSM: Procurement and Supply Management costs; OC: Operation Costs

Funding availability and gaps

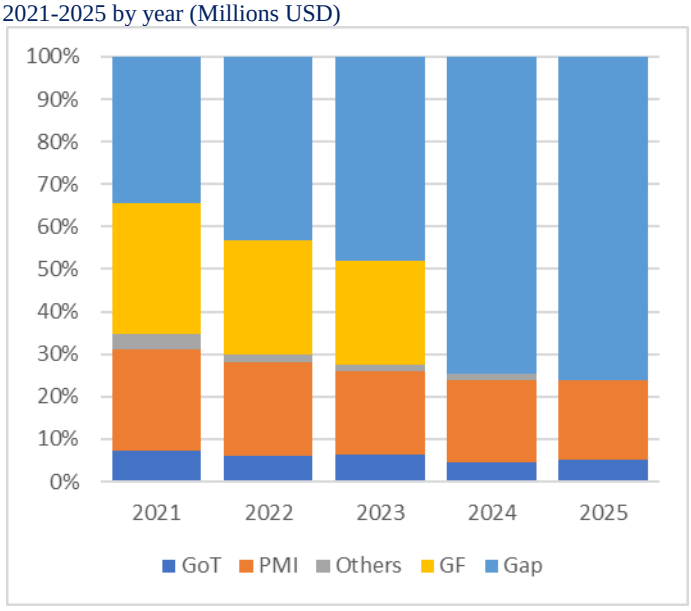
About 58% of the costs for the period 2021-2023 are anticipated to be funded, mainly through the Global fund (GF) and the US President Malaria Initiative (PMI) that are expected to provide in the three years approximately 145 and 120 million USD respectively. (Figure 24 and 25). The funding gaps increase in the last two years of the plan, due to the funding cycle of Global fund and due to the rate of scale up of some interventions.

Figure 24: Anticipated funding and financial gaps

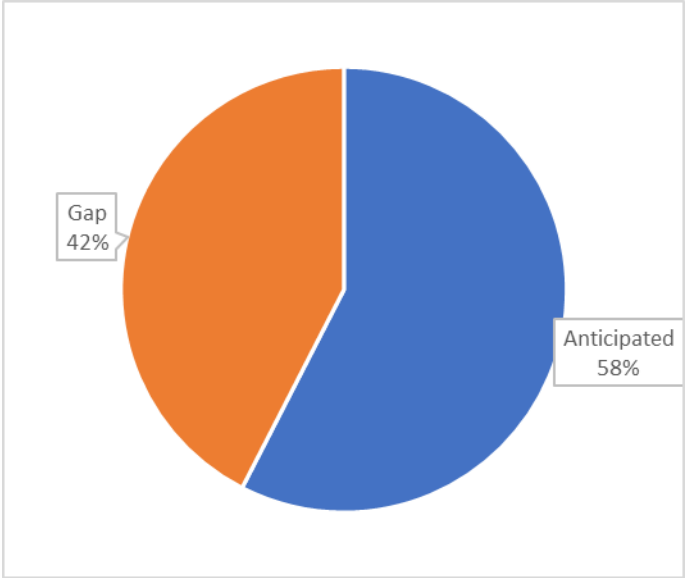
Anticipated funds and gaps needed to implement the NMSP 2021-2025 by year (Millions USD)



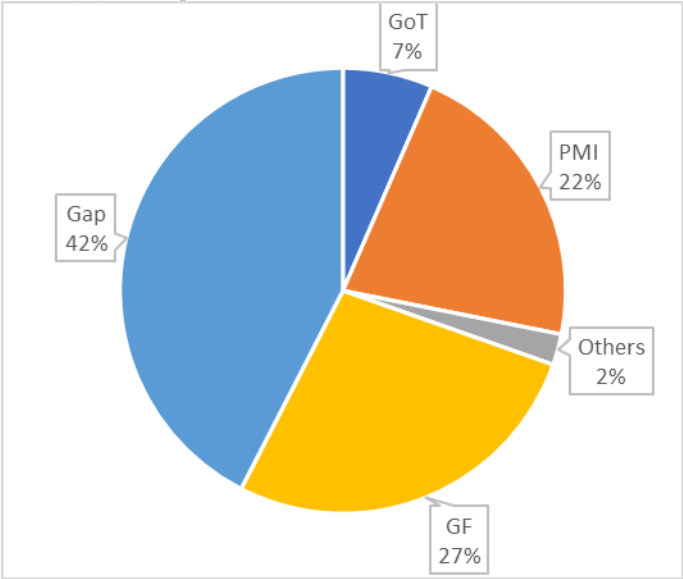
Anticipated funds by source and gaps needed to implement the NMSP 2021-2025 by year (Millions USD)



`Proportion of anticipated funds and gaps needed to implement the NMSP (%) for the period 2021-2023



Proportion of anticipated funds by source and gaps to implement the NMSP (%) for the period 2021-2023

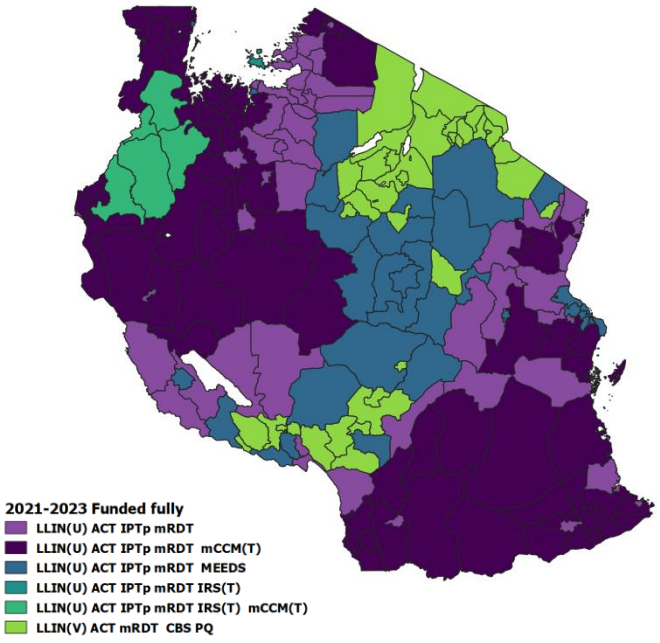


GoT:Government of Tanzania ; GF: Global Fund; PMI: US President Malaria Initiative; Others: Swiss, WHO;

The NMSP intends to implement targeted interventions according to the malaria risk of the respective councils. Figure 25 (left) illustrates the full intervention coverage if the plan will be fully funded. The NMSP strategies anticipated to be funded in the first three years of the plan are illustrated in Figure 25 (right).

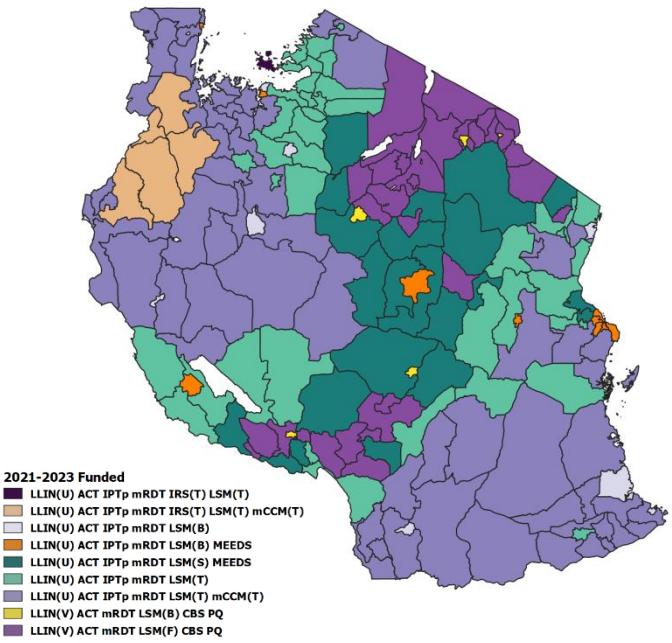
Figure 25: Councils with fully (left) and partially (right) funded intervention packages

2021-2023 Fully Funded Activities



LLIN: long lasting insecticide treated net, IRS Indoor Residual Spray; SNP: school net program; ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy, CBS: case based surveillance; CmCM: malaria community case management; SMC: Seasonal Malaria Chemoprevention; IPTi: Intermittent Preventive Treatment in infancy; IPTsc: Intermittent Preventive Treatment in school; (T): targeted; (U): universal; (V): vulnerable; MEEDS: malaria epidemic early detection system, PQ: Primaquine

2021-2023 Partially Funded Activities



LLIN: long lasting insecticide treated net, IRS Indoor Residual Spray; SNP: school net program; ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy, CBS: case based surveillance; CmCM: malaria community case management; SMC: Seasonal Malaria Chemoprevention; IPTi: Intermittent Preventive Treatment in infancy; IPTsc: Intermittent Preventive Treatment in school; LSM: larval source management; (T): targeted; (B): blanket; (U): universal; (F): focal; (E): eligible; (S): seasonal; (V): vulnerable; MEEDS: malaria epidemic early detection system, PQ: Primaquine

Cost analysis per selected strategic approaches and service delivery mechanism

Integrated Malaria Vector Control cost analysis

Approximately 56% of the costs for vector control budget (562,295,081 $) is expected to be covered with anticipated funds for the period 2021-2023. LLIN costs are 53% of the total of the vector control initiatives. This component will cover all population of the 184 councils in the country, through universal access to 148 councils and vulnerable population in 36 councils. IRS allocation is 29% of the vector control budget and intends to cover rural areas of 61 district and town councils in high transmission settings and focal spray targeting residual foci transmission in very low malaria risk councils. LSM with 18% of vector control budget, is expected to cover all 184 councils but with different modalities: universal application in 25 city and municipal councils and 21 district councils in low transmission settings; focal application in 31 district and town councils in very low transmission settings and targeted application in urban and mixed wards in 106 councils in moderate and high transmission settings. The operational costs are minimal for LLIN (16%) while is much higher for IRS and LSM, 30% and 46% respectively (Figure 26 upper line).

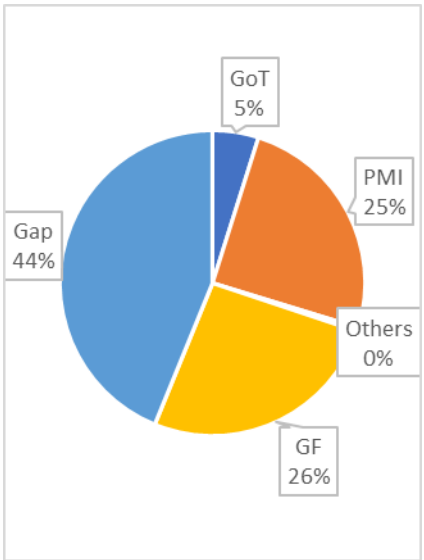
The anticipated funds by source and the remaining gaps per strategic approach are shown in figure 26 (bottom line). LSM and IRS strategies have consistent gaps compared to LLIN (42%, 40% and 7% respectively).

Vector Control: Cost per person protected or patient managed

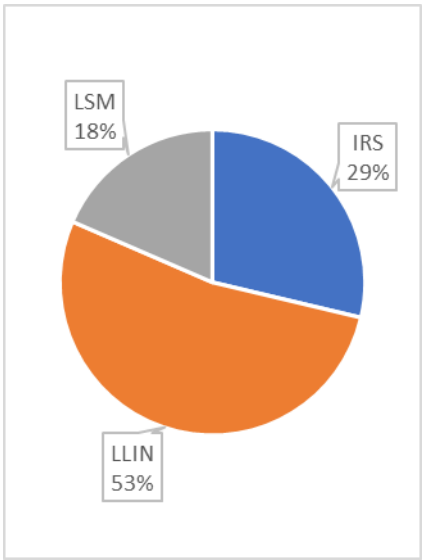
The aim of malaria vector control is to provide universal access primarily to the two core interventions: LLIN and IRS, that have a similar impact on malaria transmission: Among the two options, LLIN offers the cheapest choice in term of cost per person protected per year, 0.92 USD compared to 3.9 USD per year for IRS. The operational costs are lower for LLIN compared to IRS: 16% vs 31% of the product costs respectively (Figure 26). This is making LLIN the most cost-benefit option to cover the entire population. LLIN strategy intends to cover 100% of the biological and socio economic vulnerable groups in the country in all operational and epidemiological risk settings. In top of that, LLIN will cover the needs of universal access for the entire population in low, moderate and high malaria risk areas. Therefore, IRS, due to the costs and complex operational demand, intends to cover all the rural high transmission areas (61 district councils) and to contribute to malaria elimination in residual transmission areas in very low malaria risk councils. In this regard the total country population expected to be protected by IRS will not exceed 17%. LSM is an additional intervention after assurance of universal access to the core VC measures. In this NMSP, LSM has been selected to cover 59% of the population according to feasibility and expected impact criteria. The estimated LSM cost per person protected per year, additional to the previous IRS and LLIN, is 1.1 USD. (Table 47).

Figure 26: Cost per service delivery mechanism, Vector Control (upper charts) and anticipated funds and Funding gaps for vector control by Strategic Approach 2021-2023 (Bottom charts)

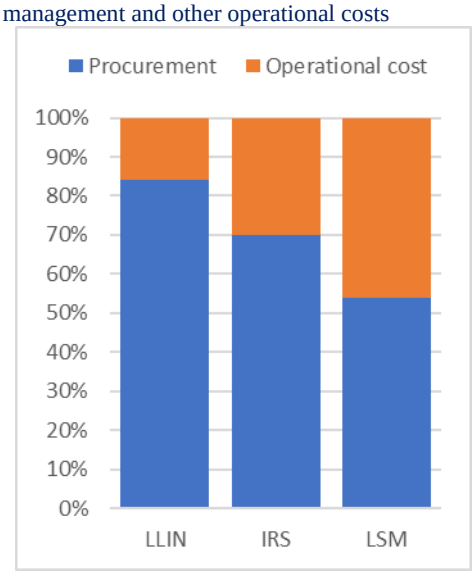
Anticipated funds and gaps needed to implement Vector Control (VC) interventions (USD) for the period 2021-2023



Proportion of anticipated funds needed to implement VC services (%) for the period 2021-2025

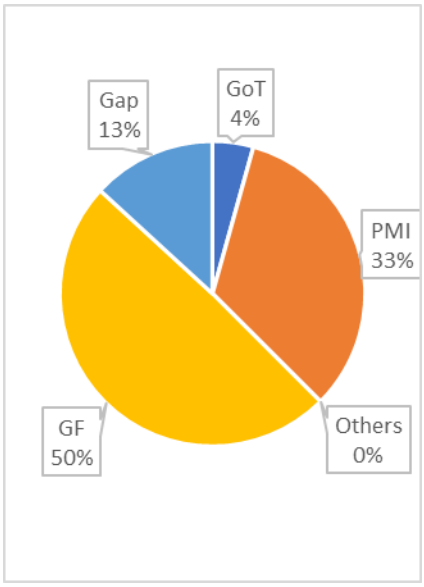


Proportion of funds needed to implement IMVC 2021-2025 by procurement and supply management and other operational costs

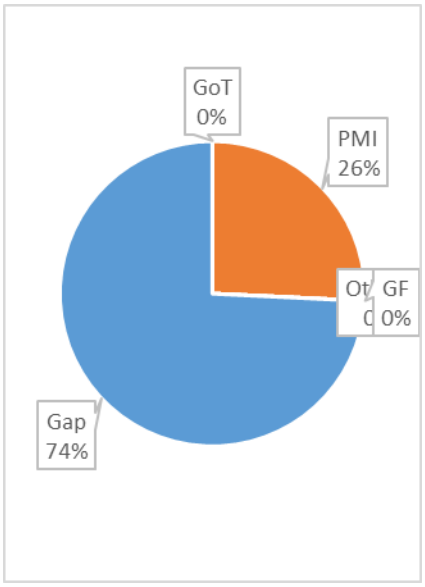


VC: Vector Control; LLIN:Long Lasting Insecticide Treated Nets; IRS: Indoor Residual Spray; LSM: Larval Source Management; PSM: Procurement and Supply Management costs; OC: Operational Costs

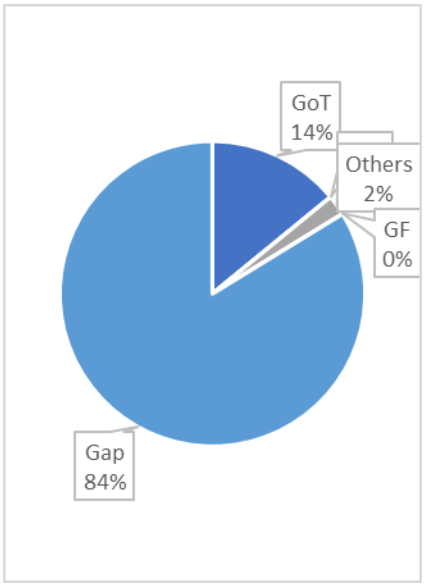
LLIN



IRS



LSM



GoT:Government of Tanzania ; GF: Global Fund; PMI: US President Malaria Initiative; Others: Swiss, WHO;

Table 477: Vector Control, cost per person protected

Strategic approach	Country coverage	Target	Average people protected per year	Cost per person protected per year ($)	Total budget
LLIN	100%	1.8 persons per net (every three years)	59,721,096	0.92	$ 274,509,679
IRS	17% in 3 years scale up	Households rural areas of 61 DC and focal IRS	9,654,636	3.89	$ 159,741,307
LSM	59% in 4 years scale up	targeted all hamlets and streets in low and urban strata, all urban and mixed plus selected hamlets and streets in very low, moderate and high strata	22,083,313	1.15	$ 127,216,537

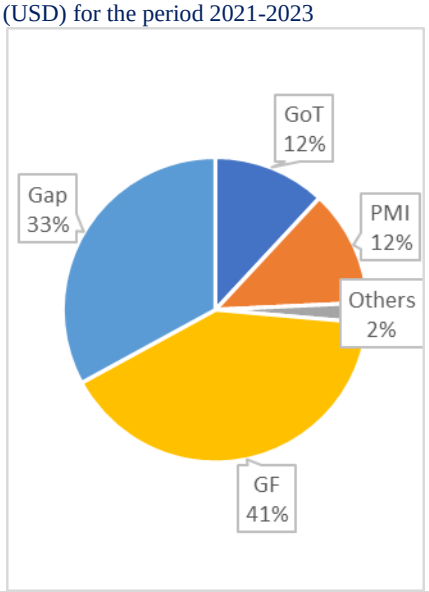
Malaria Diagnosis, Treatment and Preventive Therapies cost analysis

Approximately two third of the costs for malaria case management (235,110,360 $) is expected to be covered with anticipated funds for the period 2021-2023. Among the case management initiatives, approximately three quarter of the estimated costs (73%) is going to cover routine uncomplicated and severe malaria management. The remaining 27% are allocated to preventive therapies and to cover the needs of marginalized and disadvantaged population and special and emergency situations. For all case management initiatives, the procurement and supply management component is very conspicuous, with a maximum pf 93% for diagnosis and a minimum of 33% for special initiatives (Figure 27 upper section).

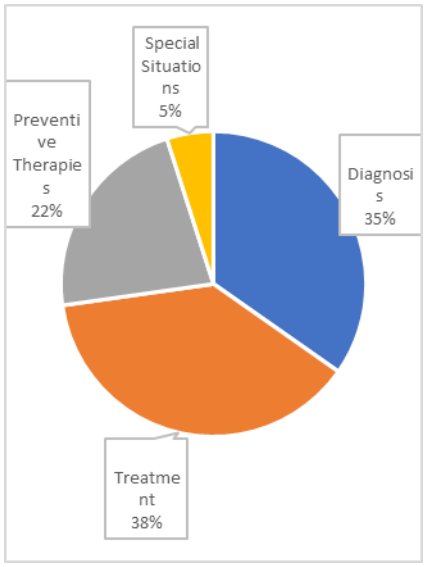
The funding gaps are very consistent for preventive therapies and special initiatives targeting vulnerabilities (special situations, marginalized and disadvantaged population). The anticipated funds by source and the remaining gaps per strategic approach are shown in Figure 27 (bottom section),

Figure 27: Cost per service delivery mechanism, Case Management` and funding gaps for case management by Strategic Approach 2021-2023 (Bottom charts)

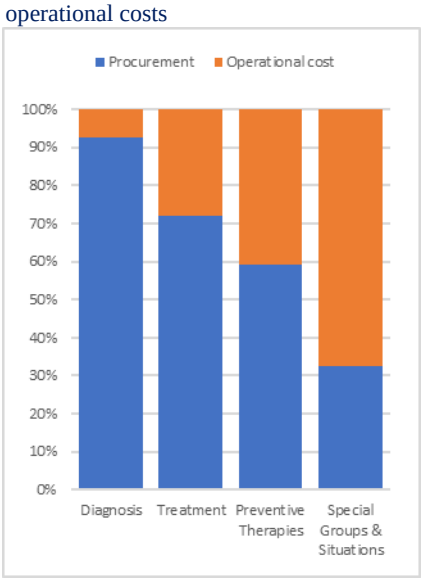
Anticipated funds and gaps needed to implement Case Management interventions (USD) for the period 2021-2023



Proportion of anticipated funds needed to implement CM services (%) for the period 2021-2023

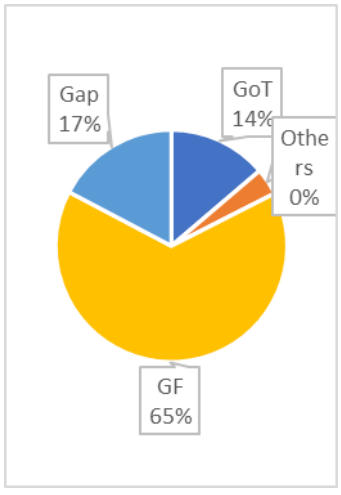


Proportion of funds needed to implement MCM 2021-2025 by procurement and supply management and other operational costs

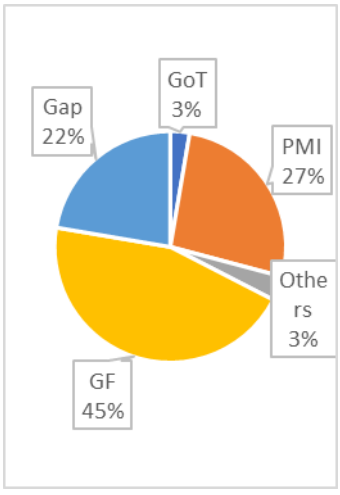


CM: Case Management; Dx: Diagnosis' Rx: Treatment; PT: Preventive Thearpies;
PSM: Procurement and Supply Management costs; OC: Operational Costs

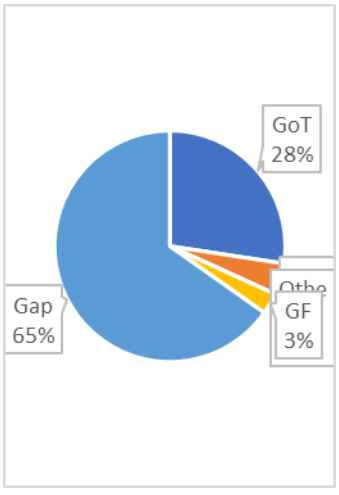
Diagnosis



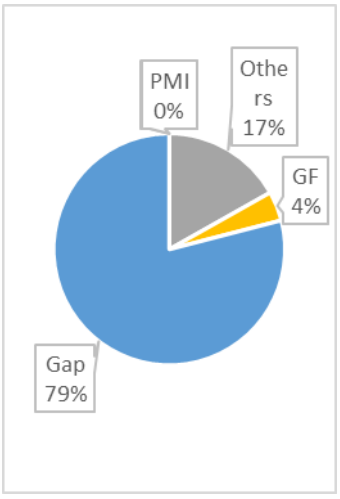
Treatment



Preventive therapies



Case Management in special situations

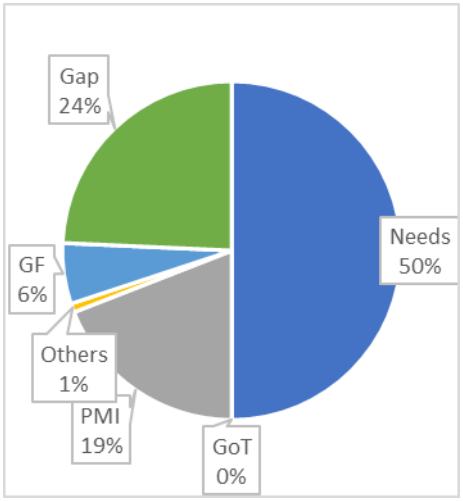


Surveillance Monitoring and Evaluation cost analysis

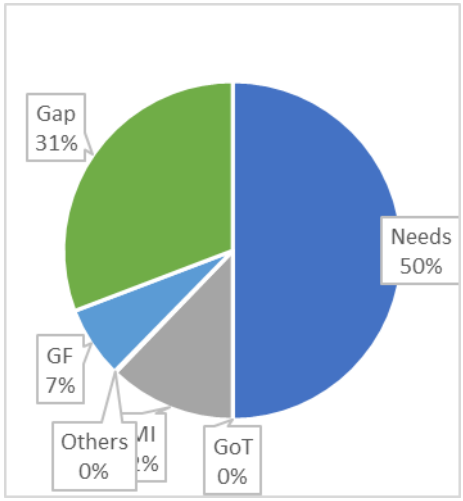
The funding gap analysis for SME interventions is illustrated in Figure 28. All strategic approaches have consistent gaps varying from 15% to 31% of the needs.

Figure 28: SME gap funding analysis

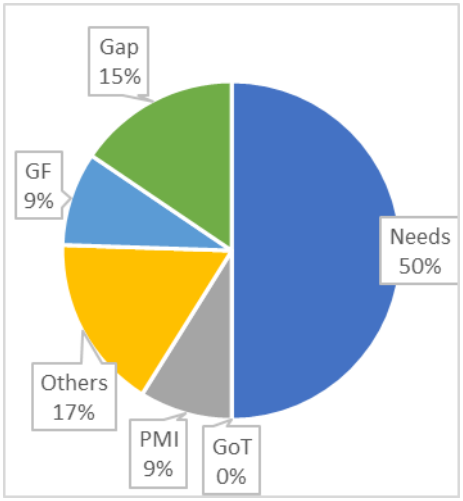
Strategic information



Surveillance



Surveys

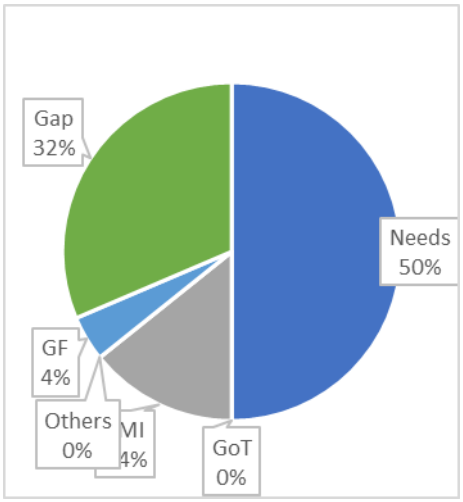


Social Behavior Change and Advocacy cost analysis

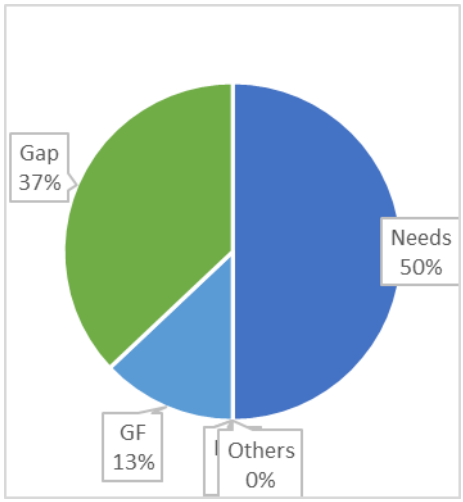
The funding gap analysis for SBC&A interventions is illustrated in Figure 29. All strategic approaches have consistent gaps close to one third of the needs.

Figure 29 SBC&A gap funding analysis

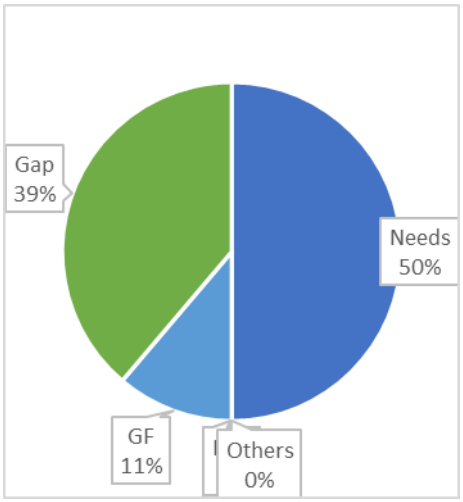
IEC



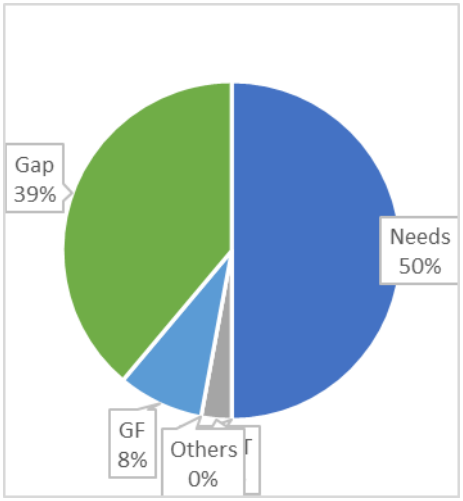
SBC for Vulnerable groups



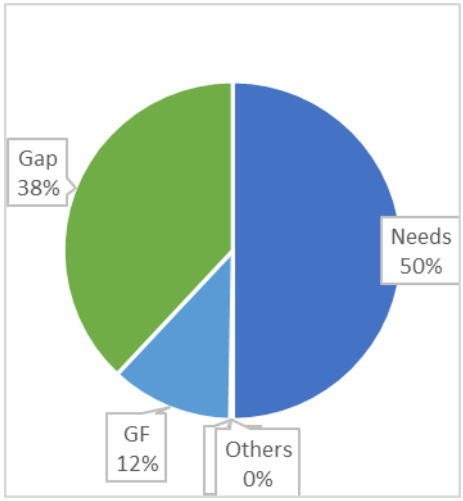
Advocacy



Community based malaria control



Public private partnership



Chapter 6: Implementation framework

NMSP work plan

The implementation of NMSP goes hand in hand with the development and implementation of the business plan and annual operational plan. The annual operational plan (AOP) is developed annually to: a) Inform the status of implementation of the interventions and activities, b) Review the financial inputs and the gaps and c) Monitor implementation according to targeted activities and their timelines. The AOP ensures that prioritized high impact and cost-effective interventions are implemented in a joint and integrated manner, so as to achieve the performance set targets in the entire NMSP.

Moreover, the AOP is the result of joint planning with malaria partners, which clearly specify roles and responsibilities of all key partner's interventions, based on their comparative advantages. As such, this plan outlines the expectations that the Program has, from each of the key implementing partners.

Alongside with AOP a three years detailed business plan need to be updated to verify the needed and anticipated resources as well as the expected funding gaps.

Implementation arrangements-

NMCP in collaboration with PO-RALG, Development and Implementing Partners, will continue to facilitate effective and efficient implementation of malaria intervention through mobilization of resources, including domestic ones, to sustain the realized achievements and successes gained via engagement with community.

NMCP overall management and governance

NMCP is responsible for overall management of malaria control in the country. However, majority of the issues are multi-sectoral and involve a range of stakeholders, including other vertical programs under the Directorate of Preventive Services, other ministries and government statutory bodies, and development partners. The thematic technical working groups, as summarized in Figure 30, are the major consultative bodies that will provide the NMCP and the MoHCDGEC the recommendations for malaria control and elimination interventions. The proposed NMCP organogram is represented in Figure 31.

Figure 30: NMCP governance structure

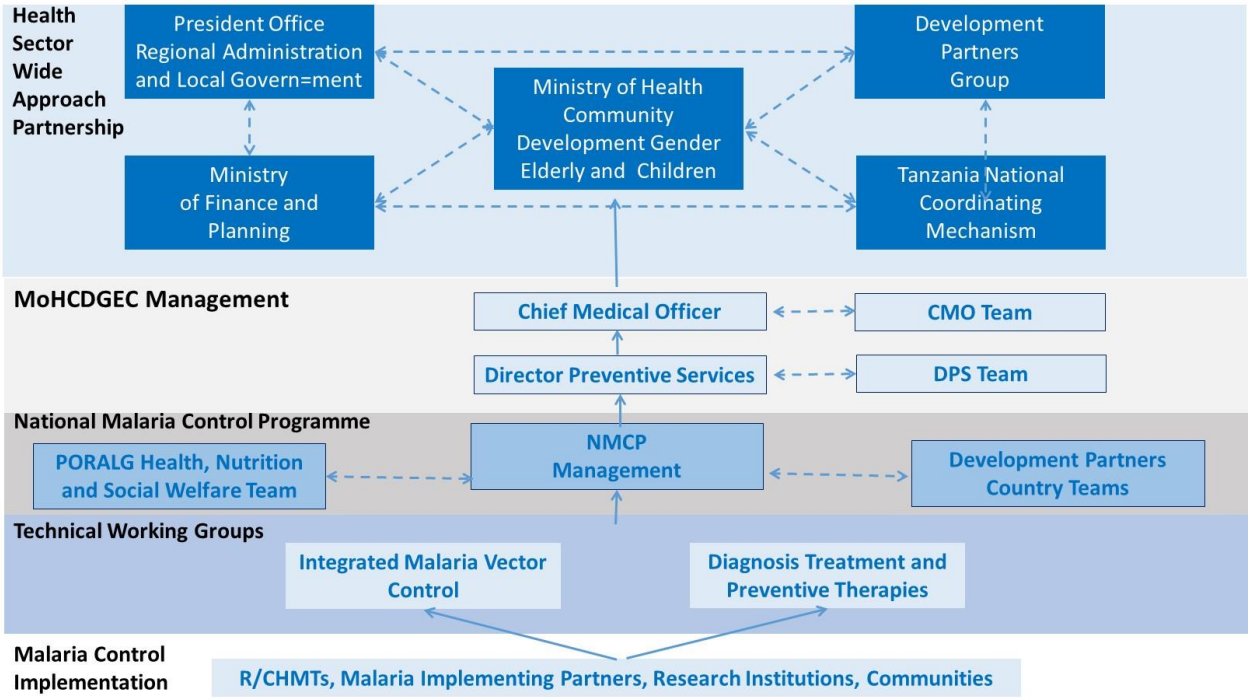
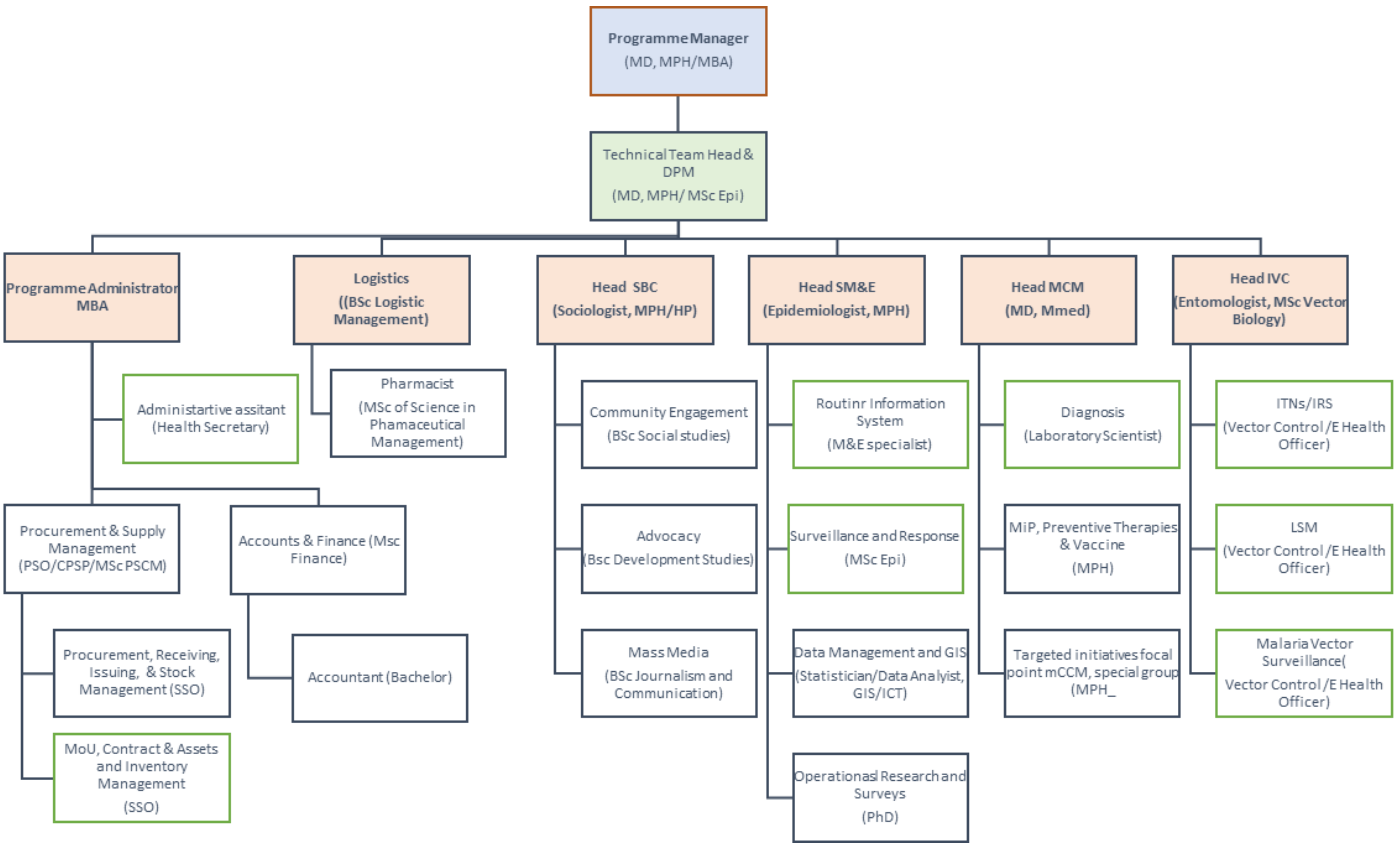


Figure 31: NMCP organogram



Roles and Responsibilities of the institutions forming the NMCP governance structure

National Malaria Control Program:

The **National Malaria Control Program** (NMCP) is responsible to define strategic decisions and develop strategic plans concerning malaria control and elimination, based on recommendations from technical working groups, the health, nutrition and social welfare directorate of PO-RALG and development partners' technical teams. Issues that involve innovative implementation initiatives or policy change will be submitted to the Directorate of Preventive Services and to the MoHCDGEC Senior Management team for review and/or endorsement. The MoHCDGEC Senior Management in turn interacts with the MoFP, the President's Office – Regional Administrative and Local Government Authorities (PO-RALG) as well as coordinating bodies of the Development Partners.

The NMCP is also entitled to mobilize resources by formulating operational plans to be submitted to development partners and Government of Tanzania. NMCP is tasked to fast track malaria control activities aimed at scaling up interventions towards the achievement of the malaria strategic plan targets. Other roles of NMCP include:

- Advise and make recommendations to the MoHCDGEC on all matters related to policies and strategies of national malaria control and elimination.
- Receive and discuss reports and approve recommendations from technical working groups on malaria control and elimination policies, strategies and interventions.
- Facilitate development of consensus among partners on strategic issues related to implementation of interventions for the prevention and control and elimination of malaria.
- Develop technical and scientifically sound guidelines for the implementation of malaria control and elimination.
- NMCP is responsible to develop guidelines for surveillance and response, disseminate guidelines, monitor implementation of the guidelines and provide technical backstopping to Regional, Council and Health facility level.
- Provide a supervision and support framework to PO-RALG, RHMT, CHMT, implementing partners and communities.
- Provide technical guidance for monitoring outcomes and processes and evaluate impact.
- Identify critical strategic and programmatic issues arising from implementation of malaria interventions and activities and assign responsibilities to working groups for follow up.
- Identify emerging programmatic and implementation research questions and bring these to the attention of relevant partners.
- Provide technical support to PO-RALG and implementing partners to addressing the capacity gaps for scaling up interventions for impact.

- Advocate for increased attention to and resources targeted to control and elimination of malaria; and
- Advocate for strengthening of partnership in addressing malaria interventions through multisectoral initiatives.

Malaria Technical Working Groups:

Two malaria technical working groups will be revitalized during this NMSP implementation:

- Integrated Malaria Vector Control (IMVC)
- Diagnosis, Treatment and Preventive therapies (DT&PT)

The functions of the former Surveillance, Monitoring, and Evaluation (SME), Commodities Logistics Management and Social Behaviour Change & Advocacy TWGs will be incorporated in the respective DT&PT and IMVC TWGs.

The permanent membership of the TWGs will be determined through a process approved by the MoHCDGEC and based on the following criteria:

- Expertise and experience in malaria programs;
- Knowledge of malaria control and elimination specific issues;
- Balance of scientific and programmatic knowledge and experience; and
- Commitment to participate actively in malaria control and elimination interventions.

All technical implementation/programmatic issues related to malaria control will be discussed at respective technical working groups and their resolutions be submitted to NMCP management and in turn to DPS. The specific TWG will meet twice a year, and ad-hoc meetings can be convened whenever necessary. The respective NMCP Head of Units will function as the secretariat.

Integrated Malaria Vector Control TWG

Integrated Malaria Vector Control TWG will work based on the following TOR:

- To advise on implementation plans and progress reports related to Malaria Vector Control.
- To review vector control activities in the country and advice the NMCP accordingly.
- To review policies, legislation, regulations and procedures and advise the NMCP on their enforcement and application.
- To review various malaria vector control activities carried out by stakeholders and give on-the-spot advice on the appropriate technical aspect.
- To review vector control operational research initiatives ongoing in the country.
- To receive and critically discuss entomological surveillance, monitoring and evaluation findings including insecticide resistance.
- To identify potential areas for research and suggest ways and mechanisms towards obtaining appropriate solutions.
- To review and advise on the best modalities of publicizing policies, policy guidelines and communication strategies on IEC related to malaria.
- To advise on innovative and cost-effective approaches for implementation of IEC on malaria to reach people at all levels.
- To advise on maximum utilization of appropriate communication channels available locally i.e. zonal, regional, district and community
- To advise on the appropriateness of IEC materials that would disseminate correct and effective information in regard to malaria vector prevention and control.
- To device best mechanisms to track progress of program interventions.
- To develop TOR and membership composition for each task force under it.
- The Integrated Malaria Vector Control TWG will be integrated into the more multi-sectoral Vector Borne Disease TWG.

Composition of the TWG

Members are selected by the respective institutions based on their expected contribution to the specific vector control matters within their areas of expertise. The TWG membership includes the following:

- Director of Preventive Services (Chairperson)
- Head of IMVC unit (Secretariat)
- Program Manager, NMCP
- Heads of NMCP MDT&PT, SME, CLM and SBC&A units
- Representative from research institutions
- Representative from training institutions
- Representative from Tropical Pesticides Research Institute (TPRI)
- Representative from the National Environmental Management Council (NEMC)
- Chairpersons of vector control task force
- Representative from Vice President's Office- Division of Environment
- Representative from the Ministry of Agriculture
- Representative from PO-RALG

- Donor Partner Group representative (Malaria Technical Advisor)
- USAID-PMI Malaria Technical advisor
- NMCP Technical Advisor
- WHO representative
- Representative from partners implementing malaria vector control initiatives
- Representative from partners implementing malaria vector control SBC initiatives

Should it be deemed necessary the TWG will co-opt members in accordance to subject matter.

Malaria Diagnosis, Treatment and Preventive Therapies TWG

A Malaria Case Management TWG will be re-established covering diagnosis, treatment, preventive therapies and vaccine will have the following TOR:

- Review the status of drug resistance and make recommendations;
- Maintain and review the quality of antimalarial drugs and manufacturing practices and recommend action, as necessary, to deal with substandard products and practices;
- Advise on government policy on antimalarial drugs;
- Review and revise, or develop as necessary, clinical guidelines for case management and laboratory diagnosis for various cadres of health workers and for use in the community;
- To receive and critically discuss epidemiological surveillance, monitoring and evaluation findings including drug efficacy,
- Review pre-service and in-service training needs for case management and laboratory diagnosis and recommend changes to curricula or training packages needed to meet these needs.
- To review operational research initiatives ongoing in the country,
- To identify potential areas for research and suggest ways and mechanisms towards obtaining appropriate solutions
- To review and advise on the best modalities of publicizing policies, policy guidelines and communication strategies on IEC related to malaria diagnosis and treatment
- To advise on innovative and cost-effective approaches for implementation of IEC on malaria to reach people at all levels.
- To advise on maximum utilization of appropriate communication channels available locally i.e. zonal, regional, district and community
- To advise on the appropriateness of IEC materials that would disseminate correct and effective information in regard to malaria diagnosis and treatment
- Review needs and stocks of supplementary supplies for treatment and diagnosis of malaria.
- Submit resolutions pertaining to malaria diagnosis and treatment to the NMCP.
- Monitor the implementation of current drug policy, identify problems and recommended solutions.
- Develop TOR and members composition for each task force under it

Composition of the TWG

The Malaria Diagnosis, Treatment and Preventive Therapies TWG members are selected by the respective institutions based on their expected contribution to the specific areas of expertise. The membership includes the following:

- Director of Curative Services (Chairperson)
- Head of the Malaria Diagnosis, Treatment and Preventive Therapies Unit (Secretariat)
- Program Manager, NMCP
- Heads of NMCP IMVC, SME, CLM and SBC units
- Paediatrician from a referral or teaching hospital
- Obstetrician/Gynaecologist from a referral or teaching hospital
- Representatives from research institutions
- Representatives from training institutions
- Representative of Therapeutic Efficacy Testing Network
- Representative from Directorate of Pharmaceutical Services
- Representative from Medical Stores Department
- Representative from Tanzania Medicine and Medical Devices Authority (TMDA)
- Laboratory Technologist from reference laboratory, MoHCDGEC
- Assistant Director, Diagnostic Services, MoHCDGEC
- Representative from Directorate of Nursing and Midwifery services
- Representative from Association for Private Hospitals
- Assistant Director, Reproductive & Child Health Services (IMCI, MIP, PMCT, IVD)
- WHO representative
- Donor Partner Group representative (Malaria Technical Advisor)
- PMI Malaria Technical advisor
- NMCP Technical Advisor
- Representative from partners implementing malaria diagnosis and treatment initiatives

- Representative from partners implementing malaria surveillance initiatives
- Representative from partners implementing malaria case management SBC initiatives

Should it be deemed necessary the TWG will co-opt members in accordance to subject matter

Specific Task Forces

Thematic programmatic areas that require competent and dedicated technical time bound contributions should be addressed by specific **task forces**. A few examples from the recent experiences include task forces to a) Address the selection of first line antimalarials, b) Deliberate therapies for curing and preventing malaria in pregnancy and c) Improve the access to malaria treatment in the private sector. Formation of taskforces, composition of the task forces and their term of reference are designated / developed by the respective technical working groups. Task forces are reporting to the technical working groups.

PO-RALG:

Regional and Council Authorities

Tanzania's public health system operates at the National (strategy and policy making), Regional (technical advice and capacity building) and Council (coordination and supervision of implementation) levels. Delivery of health services is shared among the MoHCDGEC and PO-RALG. Consultant hospitals, zonal health training centers and special/vertical programs fall directly under the MoHCDGEC. PO-RALG manages district and regional health services.

In line with the decentralization introduced in the 1990s, the MoHCDGEC has delegated decision-making power on primary healthcare to the district and regional level. The primary healthcare system is organized as a pyramidal system with different levels, including village health services, dispensary services, health center services and district hospitals. Health facility Management teams, CHMTs and RHMTs are responsible for developing annual health plans and budgets at health facility, Council and Regional level. The plans are developed in line with MoHCDGEC guidelines; however, the plans often do not provide detailed strategies or sufficient resources for effective malaria control and elimination interventions. The CHMT is also responsible for supporting health facilities and communities in the implementation of malaria control activities, as well as supervision and M&E of the district's Health Plan.

The day-to-day implementation of the regional and district malaria interventions are coordinated by the Regional and District Malaria and IMCI focal persons, who are members of the RHMTs and CHMTs, respectively. NMCP maintains a technical link to the districts and regions through the RMFPs and the DMFPs to align to the implementation process.

The District Primary Healthcare Committee, chaired by the District Commissioner, is the health advisory board at district level. The committee membership includes all key actors at district level, development partners, and representatives of the private sector, NGOs and voluntary agencies. The PHC committee will include malaria control issues as a permanent activity on its agenda.

Roles of PO-RALG Health, Social Welfare and Nutrition Directorate

- To coordinate malaria interventions at RS and LGAs level.
- To coordinate budgeting process at RS and LGA level and ensure malaria intervention are budgeted in CCHP in order to sustain implementation.
- To coordinate and conduct monitoring at RS and LGAs level on the adherence of policies, regulations and guidelines related to malaria control and elimination interventions.
- To coordinate and make use of national malaria statistics at RS and LGAs level.
- To coordinate and advice RHMTs and CHMTs to collaborate and influence community to own malaria related health service delivery.
- To coordinate capacity building and provide support on governance issues at RS and LGAs.
- To conduct cascade supportive supervision and evaluation in order to improve good governance and malaria service delivery at Regional and council level.
- To monitor adherence of ethical standards among vector control officers and Malaria Focal Persons in RS and LGAs

Roles of the Regional Malaria IMCI Focal Persons

The RMFP is a health professional selected by the RHMT and successively trained by the NMCP. The roles of the RMFP are as follows:

- Coordinate malaria interventions in the region;
- Liaise with NGOs and other partners on malaria control activities or interventions in the region;
- Consolidate district/council quarterly malaria implementation reports into a single regional quarterly malaria implementation report and reporting to NMCP in a timely manner;
- Advise the RHMT on better implementation tactics of malaria control activities or interventions in the region;
- Review malaria data of his/her region in the DHIS/Malaria dashboard, share with the RHMT and provide feedback to the relevant authority
- Function as the liaison between the PO-RALG, NMCP and RHMT on malaria control issues, especially on the availability and distribution of malaria policy guidelines; and
- Carry out any other standing or periodic assignment prescribed by RMO/RHMT.

Roles of the District Malaria IMCI Focal Persons

The DMFP is a health professional selected by the CHMT. The majority have been trained by the NMCP for a period of four weeks. The roles of the DMFP are as follows:

- Coordinate the malaria control interventions in respective Council;
- Liaise and ensure adherence to national malaria policy guidelines by all NGOs and other partners in malaria control activities and interventions in the district;
- Prepare and submit an annual technical implementation reports to RMFP and NMCP;
- Advise the CHMT on better implementation tactics of malaria control activities and interventions;
- Review malaria data of his/her region in the DHIS/Malaria dashboard, share with the RHMT and provide feedback to the relevant authority
- Function as the liaison between the PO-RALG, NMCP and RHMT on malaria control issues,
- Carry out any other standing or periodic assignment prescribed by DMO or CHMT

Partnerships and coordination

Efforts towards malaria elimination requires multi sectoral indicatives in order to raise stimulant to inspiration and guidance for action of policy and executives' decision makers as well as for practitioners in all sectors, including public and private. Currently there is no specific multi sectoral framework that guide implementation of malaria indicatives in the country.

The UNDP Multisector Action Framework for Malaria acknowledge the need for this framework with the intent of setting priority determinants to be addressed by different sectors.

NMCP will work closely with other sectors which have direct bearing on malaria prevention and control and identify areas of collaboration, including the office of the Vice President, NEMC, Ministry of Lands, Housing and Urban Development; Ministry of Agriculture; Ministry of Education; Ministry of Industries and Trade; Ministry of Natural Resources & Tourism; Ministry of Water; Ministry of Livestock Development; and Ministry of Works. The approach will emphasize complementarity, effectiveness and sustainability and will capitalize on the potential synergies to accelerate both social -economic development and malaria control. This will involve new interventions as well as putting new life into existing interventions and coordinating and managing these in new and innovative ways. Where relevant and feasible, NMCP will assist the relevant ministries and institutions to jointly develop action plans outlining inter-sectoral malaria control interventions and targets.

The NMCP will coordinate the design and implementation of the multisector framework.

Other ministries will lead the implementation of the framework in their respective areas.

Cross-border malaria initiatives

Tanzania through NMCP in collaboration with East Africa Community (EAC) & Democratic Republic of Congo (DRC) has developed a framework strategy for Great Lakes Malaria Initiative (GLMI) cross border malaria control, which has reaped progressive results that has set benchmark for moving malaria step ahead. These include; State Leaders and Ministries commitment towards resource mobilization, cross border risks control and medicine policies.

The East African Community Regional Contingency Plan for Epidemics due to Communicable Diseases, conditions and other Events of Public Health Concern (2018-2023) addresses Malaria as disease of priority among member states. Moreover, SADC member states has set an agreement to eliminate Malaria through collaborative indicatives such as the commemorations, which is not enough for border countries to share or agreed on the interventions accordingly.

The Ministry of Health / NMCP in collaboration with PO-RALG and Partners will be responsible for the review and adoption of the strategic framework for regional collaboration on malaria control and cross-border issues (Transmission, insecticide resistance, leakage, and smuggled drugs and products such as LLIN). Also, there will be existence of evidence based cross country dialogues to facilitate harmonization of strategies towards malaria elimination.

The MoHCDGEC / NMCP in collaboration with PO-RALG / MDAs and Partners will adopt / review and update the current strategy framework for regional and cross border collaboration addressing issues such as: Harmonizing the schedule for vector control interventions like mass net distribution done along the entire border; joint planning, data sharing, quality control and use of standardized specifications for nets procured; conduct joint mapping of health services and risk assessments to inform responses best-suited to the situation and to optimize activities; informal data sharing and coordination at the border district level; advocate for preventive and early seeking behavior. Furthermore, to continue with the existence of evidence based cross country dialogues to facilitate harmonization of strategies towards malaria elimination.

Moreover, NMCP will liaise with the regional network and inform the step achieved, also will coordinate review & update the present framework, share with country stakeholders for inputs and submit to higher authorities for approval.

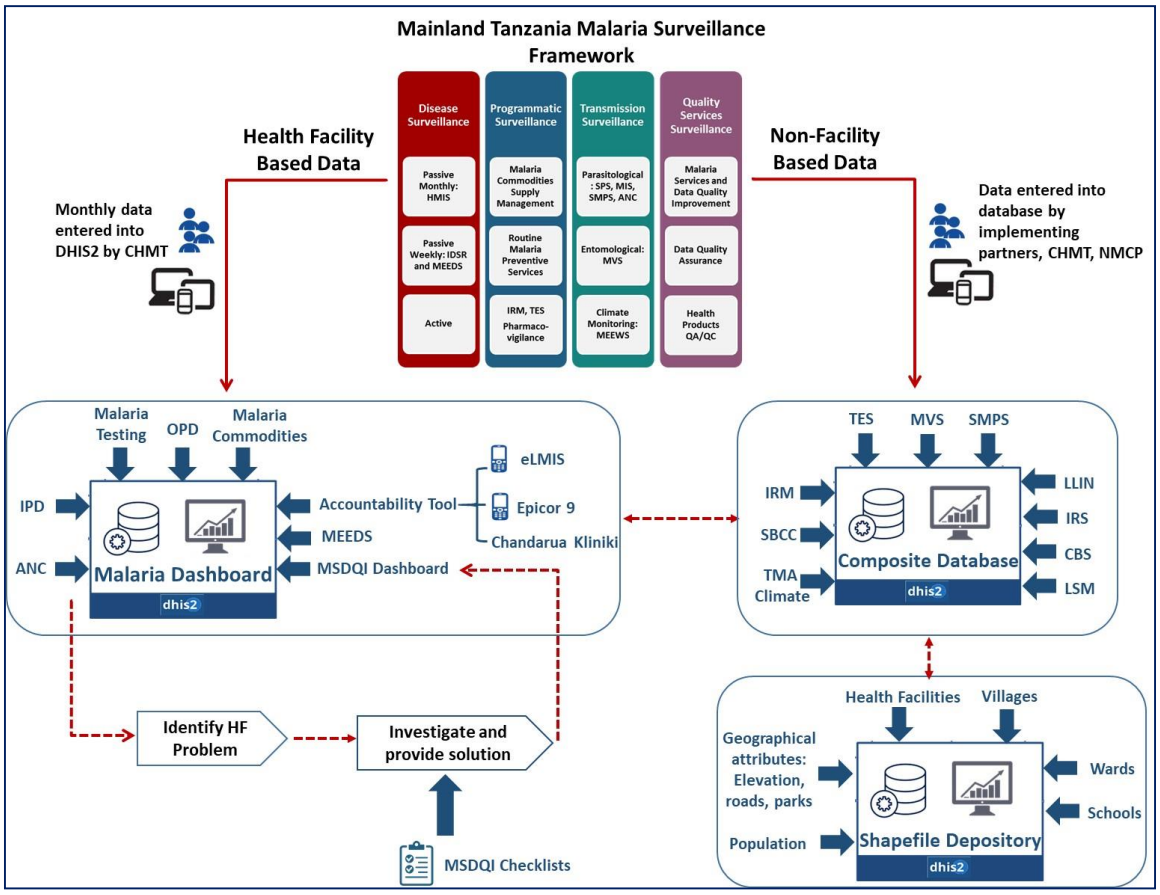
In collaboration with other sector e.g. Ministry of Foreign Affairs, Prime Minister Office, Disaster unit, etc. will facilitate the process of implementation, while PO-RALG will facilitate the implementation, monitor and supervise the agreed commitment in all

Regional Secretariat (RS) and LGAs bordering member states. Other ministries shall take lead in the implementation of agreement towards elimination of malaria through NMSP and other agreements.

Data management arrangements and malaria strategic data repository system

The council level is responsible to implement the guidelines, support health facilities to implement the guidelines, ensure the quality of data collected at health facility level and update the malaria indicators in the DHIS2. Tanzania recently developed a comprehensive malaria surveillance framework based on four (4) components: disease, programmatic, transmission and quality of services surveillance system (see Figure 32). The framework is supported by a DHIS2 based data repository system that includes: a) DHIS2 routine information from health facilities and its interactives dashboard; b) Accountability dashboard; c) Malaria services and data quality improvement dashboard; and malaria composite database. The system is at different stage of completion with some components already at second generation platform, while others are still under development and still off line.

Figure 32: Malaria surveillance and its strategic information system and its interfaces



Procurement and supply management systems

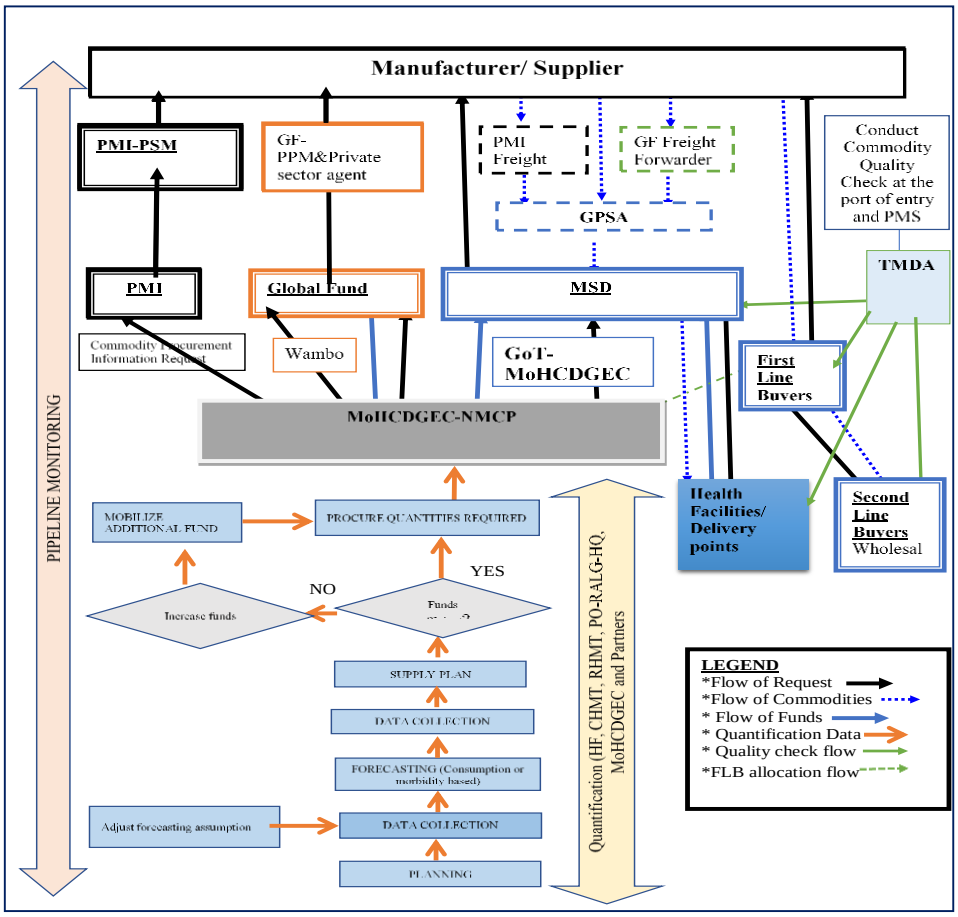
Procurement and management of malaria commodities is done by MoHCDGEC through NMCP in collaboration with MSD, TMDA, PO-RALG, First Line buyers and implementing partners as indicated in the Figure 33.

Roles and Responsibilities for Commodities and Logistic Management

- NMCP is responsible for provision of technical support for: a) Quantification; b) Quantification and supply plan review and verification; c) Programmatic gap analysis preparation; d) Provision of product specifications; quantities and delivery schedules; e) Initiating commodity procurement by sending commodities requisition through WAMBO.ORG; Commodity Procurement Information Request (CPIR) or MSD based on the source of funds; f) Review of CPIR and Price Quote and submit them to Permanent Secretary of MoHCDGEC for signature ; g) Collecting the signed Price Quote documents and send them back to the supplier for the delivery process to begun; h) PIPELINE monitoring from the planning; ordering; Receiving and distribution of Malaria commodities for vector control and Case Management to delivery points; i) Adjust the delivery schedule of commodities from suppliers depending on incoming shipments and in-country commodities' stock status; j) Quarterly physical tracking of commodity movements from supplier to MSD HQ; Zonal MSD and in the chosen delivery points for verification purposes.
- PO-RALG-HQ is responsible for a) Provision of technical support during quantification; b) Quantification and supply plan review, verification and compilation; c) Oversight of RHMT and CHMT and Health Facilities supply chain activity implementation and d) Provide technical support for HF level, CHMT and RHMT.

- RHMT is responsible for a) Bottom up quantification and supply plan review, verification, compiling quantification for all Councils b) Council commodity requests review, approve, compile and send to MSD Zone; c) Oversee supply chain activity implementation at Council level and d) provide technical support to Councils.
- CHMT is responsible for a) Bottom up quantification and supply plan review, verification, compiling quantification for Health Facilities and send to the Regional level; b) Health Facility commodity requests review, approve, compile and send to MSD Zone; c) Oversee supply chain activity implementation at delivery points level and d) Provide technical support to delivery points.
- Delivery points are responsible for a) Quantification of their needs by bottom up quantification; b) Preparation of supply plan; c) Send their quantification to the Council; d) Forecasting requirements in accordance to their needs and ordering schedules; e) Requesting commodities by sending their requests through Councils; f) Receiving, documenting, inventory management at delivery point and g) Dispensing or issuing all malaria commodities to clients.
- MSD is responsible for a) Procurement of GoT funded commodities including emergency procurement when there is national stock-out of commodities; b) Receiving, physical quality check during receiving, storing and distributing Malaria commodities up to delivery points according to national guidelines on storage and distribution of health commodities; c) Receiving commodities from delivery points when recalled back.
- PPM is responsible for procurement of GF funded commodities
- PMI implementing partner is responsible for procurement of PMI funded commodities.
- Approved Prime Vendors (PV) are responsible to supply commodities to delivery points in the event that malaria commodities for Vector Control and Malaria Case Management are stocked out at MSD
- GPSA is responsible for clearing at the port of entry of all malaria commodities for Vector Control and Case Management for public health use
- TMDA is responsible to ensure quality of all medicine and medical devices that are distributed in the country throughout the supply chain; product evaluation; registration and monitoring
- TPRI is responsible to ensure quality of all commodities with insecticides that are distributed in the country throughout the supply chain.
- TBS is responsible to ensure denier quality of LLIN that are distributed in the country throughout the supply chain.
- Pharmaceutical Section Unit of MoHCDGEC is responsible to provision of technical support during quantification; oversee and provide technical support in implementation of Malaria commodities for Vector Control and Case Management supply chain in all levels.
- Implementing partners are responsible for technical support.

Figure 33: procurement and supply management system



Financial resources management and audits

The primary role of financial management in an organization is to manage fund and risk in a way that helps to achieve the financial goals of the organization. When an organization has strong and organized financial management plans, they're able to provide efficient services.

NMCP has been managing fund through various mechanism i.e. auditing (Internal and External), quarterly review of work done by implementing Partners.

In order for the program to capture the financial resource for Malaria interventions all Malaria implementing partner are required to submit audited financial statements together with the implementation status of the project annually for those funds which we receive from various donors through different implementing partners and signed by the government.

Financial resources which were received should be reported to Director of Policy and Planning-MoHCDGEC to be captured in the National Heath Account (NHA). All implementers are required to provide the accurate financial information to NHA team when required

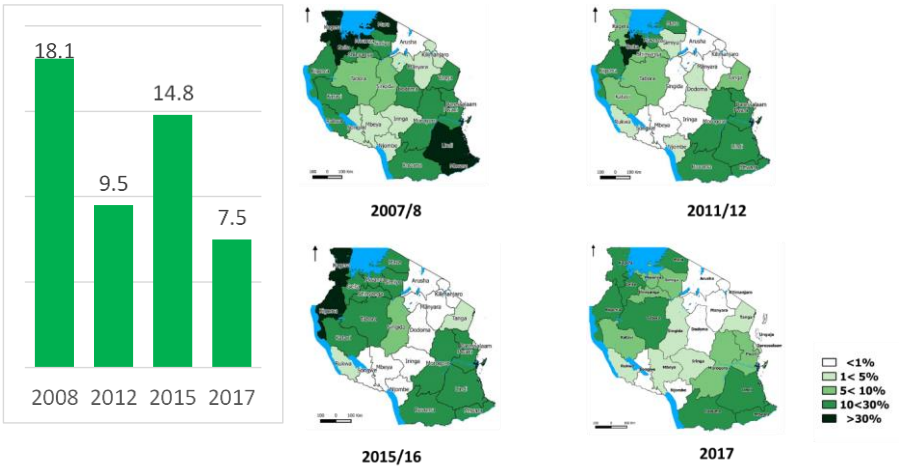
Annexes

Annex 1: Sources of data for Malaria Transmission

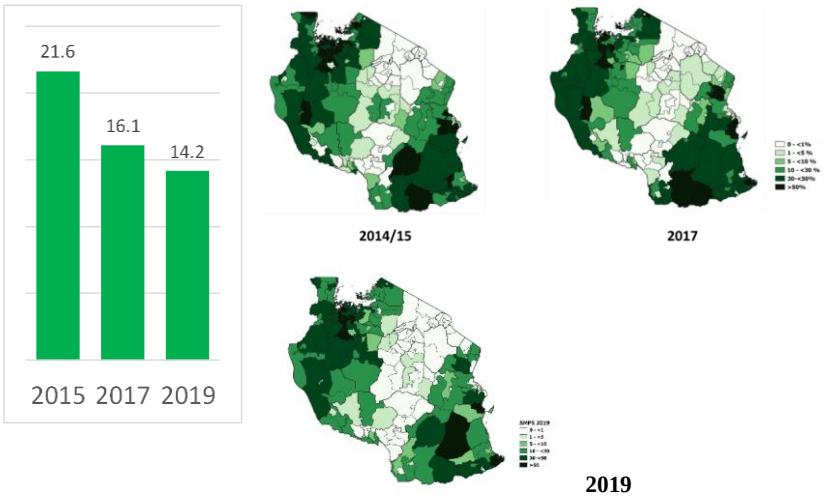
In the recent years NMCP-Tanzania and its partners collected an impressive amount of data both from routine health facilities data and parasitological surveys confirming high malaria transmission heterogeneity in the sentinel population.

The main sources of information are: a) MISs conducted in 2008, 2012, 2015/6, 2017 monitored regional representative parasite prevalence in children aged between 2-59 months; b) school malaria parasitological survey conducted between 2014/15, 2017 and 2019 in children aged 5-15 years (Figure 35); and c) pregnant women aged 15-45 years tested in ANC from 2015-2019 (Figure 36).

MIS prevalence 2-59 months' children (2007/8, 2012, 2015/6, 2017); source DHS-MIS.

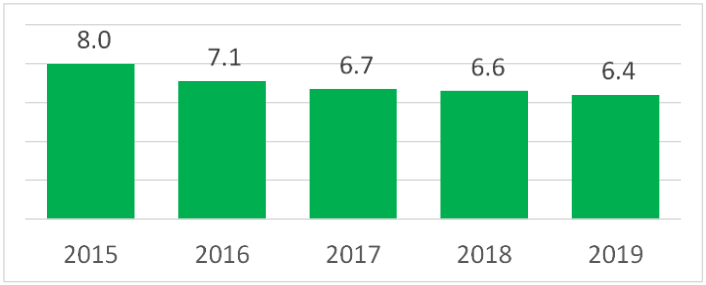


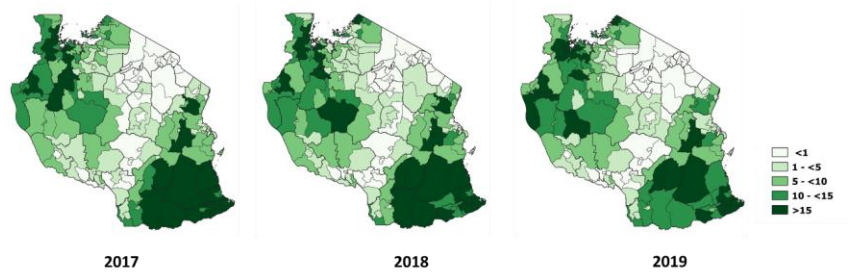
Prevalence in children 6-15 years School Malaria Parasitological Surveillance (2014-15, 2017, & 2019



Source NMCP

Pregnant women 15-45 years, malaria positivity rate in health facilities through Antenatal Clinic (2016),





Source: NMCP

Annex 2: Malaria risk stratification:

Methodology

Based on the recommendations from WHO[20], as well as consideration of the availability, frequency and robustness of malaria data, the following malaria indicators were selected to conduct the stratification: 1) Parasite prevalence in school children from school surveys 2) fever test positivity rate (TPR), 3) annual parasite incidence (API), 4) confirmed malaria incidence and 5) malaria positivity rate in pregnant women.

The table below summarizes the WHO recommended parameters and the country specific indicators that were used for the stratification process. Assemblies of annual parasite incidence and fever test positivity rate as well as confirmed malaria incidence and malaria positivity in pregnant women were obtained from routine district health information software. In addition, parasite prevalence in school children (*Pf*PR_{5to16}) were obtained from council representative school malaria parasitaemia surveys.

Key parameters used for country malaria stratification

Source	Indicator	Numerator	Denominator	WHO recommended	Selected Country parameters
SMPS	Parasite prevalence	No. positive pf-pan RDT	No. Pf-Pan RDT tests performed in school children	✓	✓
HMIS/ DHIS2	**Laboratory**				
	Fever Test Positivity Rate	No. positive pf-pan RDT	No. Pf-Pan RDT tests performed	✓	✓
	Annual Parasite Incidence	No. positive pf-pan RDT and microscopy	Per 1,000 population[α]	✓	✓
	Outpatient Department				
	Confirmed Malaria Incidence	No. positive pf-pan RDT, and microscopy	Per 1,000 population[α]		✓
	Antenatal Clinic				
	Test Positivity Rate	No. positive pf-pan RDT	No. Pf-Pan RDT tests performed in pregnant women at first visit		✓

HMIS=Health Management Information System; DHIS2=District Health Information System 2; RDT=malaria Rapid Diagnostic Test; pf=*Plasmodium falciparum*; SMPS= School Malaria Parasitaemia Survey

The stratification process included three major processes: 1) indicators were classified according to cut-offs defined; 2) each indicator was categorized into risk groups according to the determined cut-offs and scores assigned to each risk group; 3) the scores were summed per council across indicators, to obtain a combined measure that assigns the councils to the overall risk strata.

1. *Classification definition of indicators*

The current international guidelines for malaria elimination remain unspecific on the precise criteria for accelerating elimination efforts but define low transmission areas where community-based prevalence is between 1-10% and very low as below 1% [21]. WHO classifications of higher transmission settings include a moderate group (*Pf*PR_{5to16} 10-35%) and high (*Pf*PR_{5to16} >35%). For the stratification in mainland Tanzania, the classification has retained both very low (*Pf*PR_{5to16} <1%) and high (adapted to be a *Pf*PR_{5to16} >30%). Within this range, two additional groups were considered: low (PfPR5-16 1-5%) which provides a pre-very low classification to mitigate against the risks of misclassifying very low areas and moderate prevalence (*Pf*PR_{5to16} 5-30%).

[20] WHO. Malaria surveillance, monitoring & evaluation: a reference manual. Geneva, World Health Organization, 2018

[21] WHO, Global Malaria Program. A framework for malaria elimination. Geneva, World Health Organization, 2017. Available from: http://apps.who.int/iris/bitstream/10665/254761/1/9789241511988-eng.pdf

There is far less historical evidence of appropriate criteria for the classification of fever infection prevalence and incidence, therefore the prevalence in school children was used to guide the setting of appropriate cut-offs for categorizing these indicators. The set cut-offs are summarized in below Table.

Cut-offs used to categorize indicators into risk strata

Indicator		Very Low	Low	Moderate	High
School Malaria Parasitaemia Survey					
Parasite prevalence	Prevalence Cut-off	<1	1-<5	5-<30	≥30
Laboratory					
Fever Test Positivity Rate	Prevalence Cut-off	<5	5-<15	15-<30	≥30
Annual Parasite Incidence	Prevalence Cut-off	<15	15-<75	75-<150	≥150
Outpatient Department					
Confirmed Malaria Incidence	Prevalence Cut-off	<15	15-<50	50-<150	≥150
Antenatal Clinic					
Test Positivity Rate	Prevalence Cut-off	<1	1-<3	3-<10	≥10

2. *Risk categorization and assignment of risk scores per indicator*

In a second step, all indicators for each council were categorized and assigned a score from 1-4 corresponding to four groups "very low (1)", "low (2)", "moderate (3)" and "high (4)" according to the cut-offs defined in above Table. The approach used was conservative, categorizing councils by their maximal risks over the past 3 years. Taking the maximum of multiple years' data is valuable in ensuring that unstable councils prone to rebound of prevalence were not misclassified into the lower strata which improves the validity of the stratification and exposes more councils to aggressive control interventions.

3. *Combination of indicators using scores*

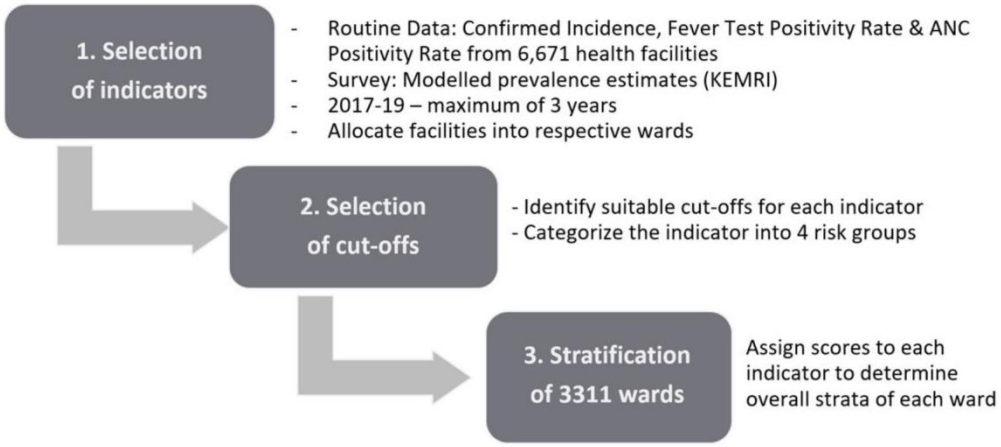
To obtain overall malaria risk by council, the sum of the assigned indicator scores was calculated. For each council, the resulting total score ranged from 4 (all indicators indicate "very low" malaria risk) to 16 (all indicators indicate "high" malaria risk). The scale from 4 to 16 was subdivided into four categories to form the epidemiological strata. Specifically, councils with an overall score ≤6 were allocated to the very low stratum, >6 - ≤10 in the low stratum, >10 - ≤14 in moderate stratum and >14 in the high stratum. In addition to these 4 epidemiological strata, urban councils were considered as a separate, non-epidemiological stratum with specific operational and intervention needs.

The final composite stratification map following the combination of the multiple malaria indicators is shown in Figure 9. The stratification process is a continuous cycle, with the strata expected to be updated every 3 years as part of mid-term strategic reviews. The stratification approach of mainland Tanzania served as a basis in guiding the malaria control program in re-defining packages of interventions across the spectrum of malaria risk.

Micro-stratification (Preliminary analysis)

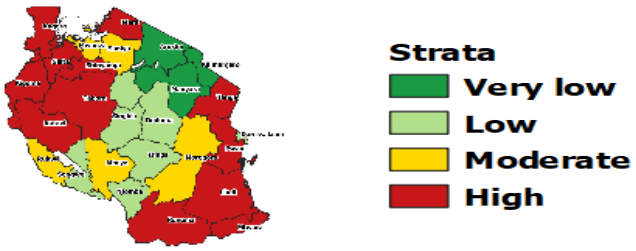
Using a similar methodological approach to that of macro-stratification, a micro-stratification based on routine data from 2017-2019 was conducted as summarized in below flow chart. The overall composite micro-stratification is shown in Figure 10.

Steps for micro-stratification of malaria risk

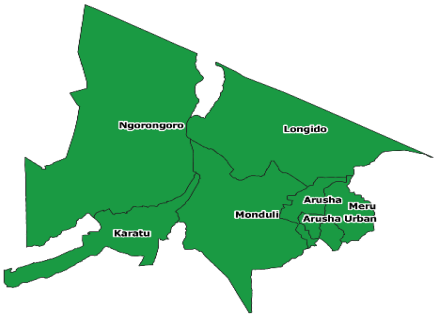


This micro-stratification done for mainland Tanzania represents a preliminary analysis. At finer spatial resolution, there is greater limitation posed by higher levels of uncertainty due to fewer facility data points. Therefore, a more robust methodology with better statistical handling of routine data is required to get improved predictions of the malaria estimates and for defining appropriate thresholds of risk groups at the granular level (ward). This is work planned over the next three years in mainland Tanzania.

Malaria council risk mapping by region



1. Arusha

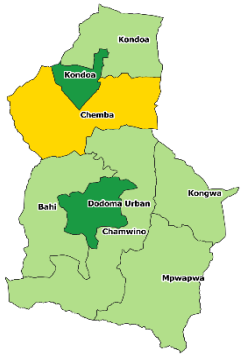


Strata	District	Population	
Very low	Arusha CC	508,709	25%
	Arusha DC	384,177	19%
	Karatu DC	275,467	13%
	Longido DC	163,155	8%
	Meru DC	297,597	15%
	Monduli DC	213,399	10%
	Ngorongoro DC	214,337	10%
Total		2,056,842	

2. Dar es Salaam

Strata	District	Population	
Low	Ilala MC	1,896,813	29%
	Kinondoni MC	241,772	21%
	Temeke MC	1,299,458	26%
	Ubungo MC	1,789,487	19%
	Kigamboni	1,181,610	5%
Total		6,409,141	

3. Dodoma



Strata	District	Population	
Very low	Dodoma MC	749,583	27%
	Kondoa TC	72,846	3%
		822,428	**30%**
Low	Bahi DC	256,357	9%
	Chamwino DC	398,307	15%
	Kondoa DC	243,670	9%
	Kongwa DC	378,643	14%
	Mpwapwa DC	368,204	13%
		1,645,181	**60%**
Moderate	Chemba DC	272,187	10%
Total		2,739,796	

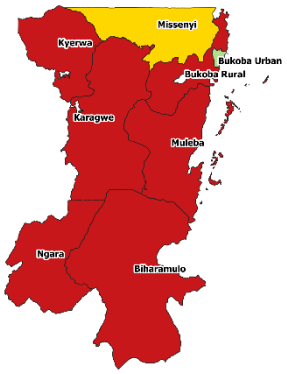
4. Geita

Strata	District	Population	
High	Bukombe DC	232,520	11%
	Chato DC	449,060	22%
	Geita DC	756,264	37%
	Geita TC	237,005	12%
	Mbogwe DC	203,626	10%
	Nyang'hwale DC	178,728	9%
Total		2,057,204	

5. Iringa

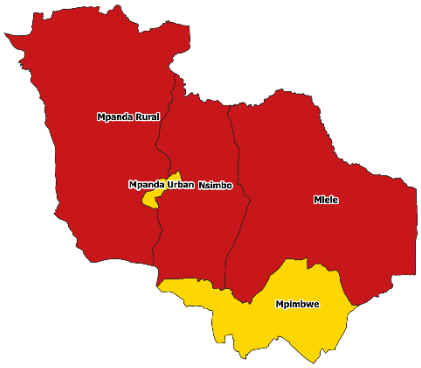
Strata	District	Population	
Very low	Iringa MC	192,556	19%
	Mafinga TC	96,842	9%
		490,271	**28%**
Low	Iringa DC	261,225	25%
	Kilolo DC	229,047	22%
	Mufindi DC	258,411	25%
		547,809	**72%**
Total		1,038,080	

6. Kagera



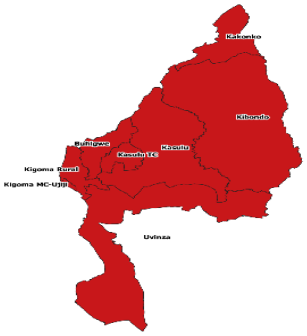
Strata	District	Population	
Low	Bukoba MC	177,635	6%
Moderate	Missenyi DC	245,844	8%
High	Biharamulo DC	522,856	16%
	Bukoba DC	328,230	10%
	Karagwe DC	467,185	15%
	Kyerwa DC	451,716	14%
	Muleba DC	682,789	21%
	Ngara DC	311,201	10%
		2,763,978	**87%**
Total		**3,187,457**	

7. Katavi



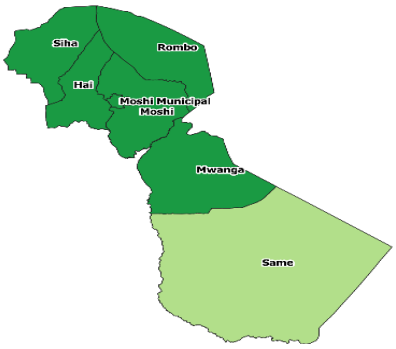
Strata	District	Population	
Moderate	Mpanda DC	239,724	36%
	Mpimbwe DC	111,634	17%
		374,913	**56%**
High	Mlele DC	37,380	6%
	Mpanda MC	135,189	20%
	Nsimbo DC	147,687	22%
		185,067	**28%**
Total		**671,613**	

8. Kigoma



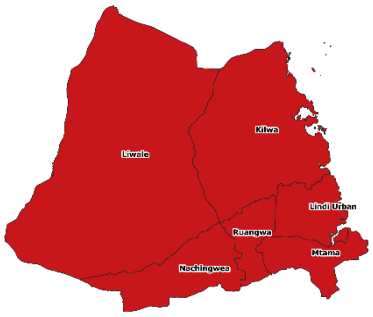
Strata	District	Population	
High	Buhigwe DC	310,689	12%
	Kakonko DC	167,555	6%
	Kasulu DC	581,728	22%
	Kasulu TC	302,928	11%
	Kibondo DC	304,312	12%
	Kigoma DC	248,372	9%
	Kigoma MC	289,294	11%
	Uvinza DC	432,906	16%
Total		**2,637,784**	

9. Kilimanjaro



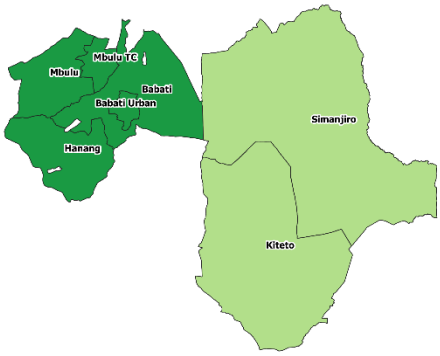
Strata	District	Population	
Very low	Same DC	318,531	17%
	Hai DC	243,993	13%
	Moshi DC	521,887	28%
	Moshi MC	214,824	12%
	Mwanga DC	143,878	8%
	Rombo DC	269,540	15%
	Siha DC	140,160	8%
Total		**1,852,813**	

10. Lindi



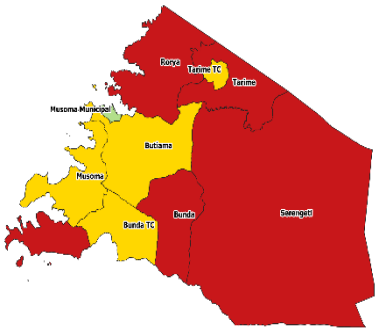
Strata	District	Population	
High	Kilwa DC	203,361	22%
	Lindi MC	181,422	19%
	Liwale DC	104,965	11%
	Mtama DC	122,044	13%
	Nachingwea DC	191,334	20%
	Ruangwa DC	136,683	15%
Total		939,809	

11. Manyara



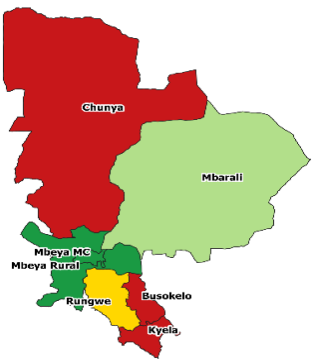
Strata	District	Population	
Very low	Babati DC	388,302	22%
	Babati TC	99,824	6%
	Hanang DC	339,433	19%
	Mbulu DC	235,607	13%
	Mbulu TC	158,296	9%
		1,221, 462	**69%**
low	Kiteto DC	337,447	19%
	Simanjiro DC	210,963	12%
		548,411	**31%**
Total		**1,769,873**	

12. Mara



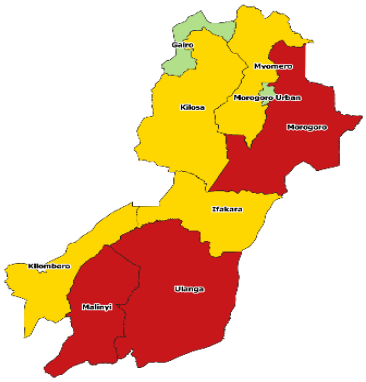
Strata	District	Population	
Low	Musoma MC	156,429	8%
Moderate	Bunda TC	161,815	8%
	Butiama DC	256,284	12%
	Musoma DC	238,226	11%
	Tarime TC	90,879	4%
		747,203	**36%**
high	Bunda DC	242,214	12%
	Rorya DC	304,675	15%
	Serengeti DC	317,333	15%
	Tarime DC	304,703	15%
		1,168,925	**56%**
Total		**2,072,557**	**100%**

13. Mbeya



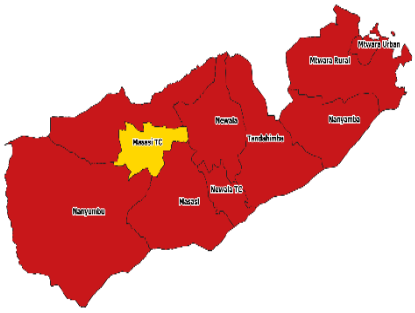
Strata	District	Population	
Very low	Mbeya CC	496,852	25%
	Mbeya DC	345,930	17%
		842,782	**42%**
Low	Mbarali DC	357,220	18%
Moderate	Rungwe DC	260,324	13%
High	Busokelo DC	103,298	5%
	Chunya DC	198,130	10%
	Kyela DC	261,489	13%
		562,918	**28%**
Total		**2,023,244**	**100%**

14. Morogoro



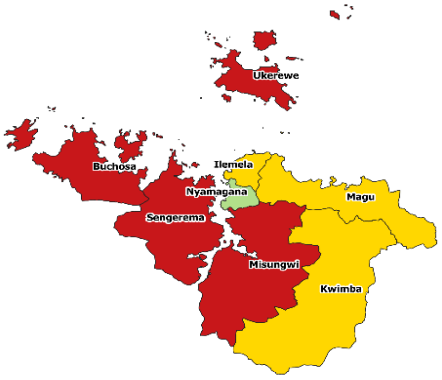
Strata	District	Population	
low	Gairo DC	238,997	9%
	Morogoro MC	395,998	15%
		634,995	**24%**
moderate	Ifakara TC	267,618	10%
	Kilombero DC	213,923	8%
	Kilosa DC	517,313	20%
	Mvomero DC	356,065	14%
		1,354,919	**52%**
high	Malinyi DC	142,372	5%
	Morogoro DC	302,665	12%
	Ulanga DC	188,252	7%
		633,289	**24%**
Total		**2,623,203**	**100%**

15. Mtwara



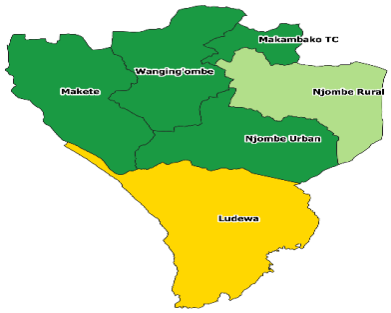
Strata	District	Population	
moderate	Masasi TC	113,977	8%
high	Masasi DC	269,586	19%
	Mtwara DC	144,592	10%
	Mtwara MC	121,025	9%
	Nanyamba TC	102,232	7%
	Nanyumbu DC	166,279	12%
	Newala DC	129,249	9%
	Newala TC	96,359	7%
	Tandahimba DC	247,597	18%
		1,276,920	**92%**
Total		**1,390,896**	**100%**

16. Mwanza



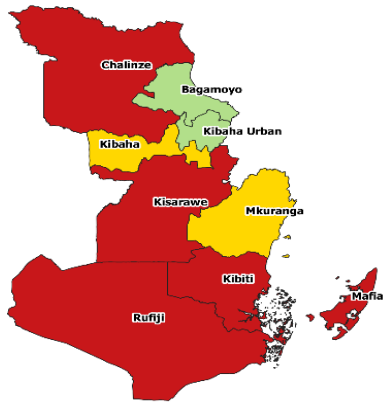
Strata	District	Population	
low	Nyamagana MC	528,706	15%
moderate	Ilemela MC	410,513	12%
	Kwimba DC	486,521	14%
	Magu DC	344,329	10%
		1,241,363	**36%**
high	Buchosa DC	397,665	12%
	Misungwi DC	438,344	13%
	Sengerema DC	406,764	12%
	Ukerewe DC	418,751	12%
		1,661,524	**48%**
Total		**3,431,593**	**100%**

17. Njombe



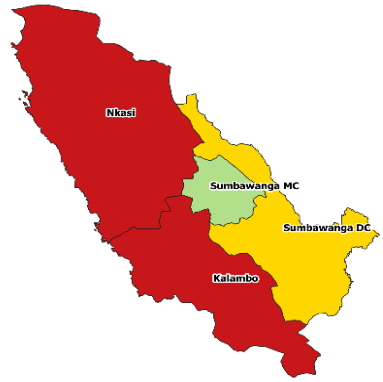
Strata	District	Population	
Very low	Makambako TC	116,186	16%
	Makete DC	92,835	12%
	Njombe TC	145,281	19%
	Wanging'ombe DC	167,814	22%
		522,115	**70%**
low	Njombe DC	86,954	12%
moderate	Ludewa DC	137,968	18%
Total		**747,037**	**100%**

18. Pwani



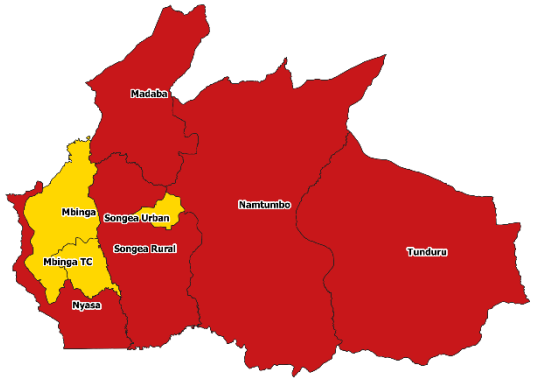
Strata	District	Population	
Low	Bagamoyo DC	120,928	9%
	Kibaha TC	180,796	14%
		301,724	**23%**
Moderate	Kibaha DC	84,603	6%
	Mkuranga DC	252,572	19%
	Rufiji DC	99,361	8%
		436,536	**33%**
High	Chalinze DC	283,052	22%
	Kibiti DC	128,785	10%
	Kisarawe DC	105,943	8%
	Mafia DC	51,185	4%
		568,965	**44%**
Total		1,307,225	100%

19. Rukwa



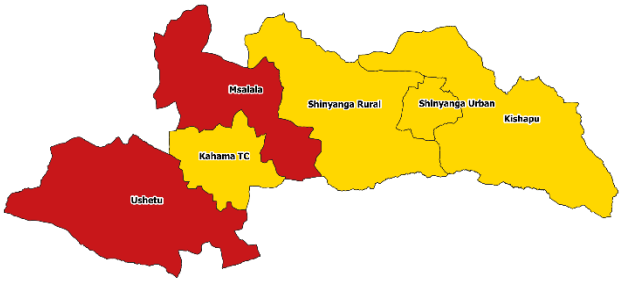
Strata	District	Population	
low	Sumbawanga MC	269,122	21%
moderate	Sumbawanga DC	475,823	37%
High	Kalambo DC	204,808	16%
	Nkasi DC	345,838	27%
		550,646	**43%**
Total		1,295,590	100%

20. Ruvuma



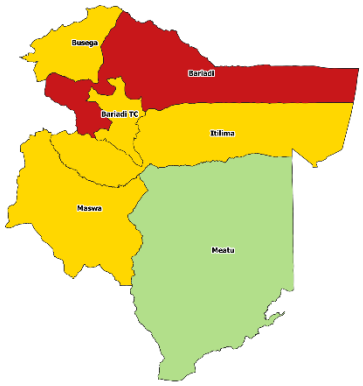
Strata	District	Population	
moderate	Mbinga DC	269,199	17%
	Mbinga TC	134,293	8%
	Songea MC	274,836	17%
		678,328	**42%**
high	Madaba DC	51,220	3%
	Namtumbo DC	222,248	14%
	Nyasa DC	176,128	11%
	Songea DC	139,310	9%
	Tunduru DC	340,285	21%
		929,192	58%
Total		1,607,520	100%

21. Shinyanga



Strata	District	Population	
moderate	Kahama TC	320,883	18%
	Kishapu DC	299,935	17%
	Shinyanga DC	389,285	22%
	Shinyanga MC	182,859	10%
		1,192,963	**67%**
high	Msalala DC	286,034	16%
	Ushetu DC	311,528	17%
		597,561	**33%**
Total		1,790,524	100%

22. Simiyu



Strata	District	Population	
	Meatu DC	344,214	19%
moderate	Bariadi TC	168,118	9%
	Busega DC	230,677	13%
	Itilima DC	353,213	20%
	Maswa DC	374,093	21%
		1,126,101	**63%**
high	Bariadi DC	324,386	18%
Total		**1,794,702**	**100%**

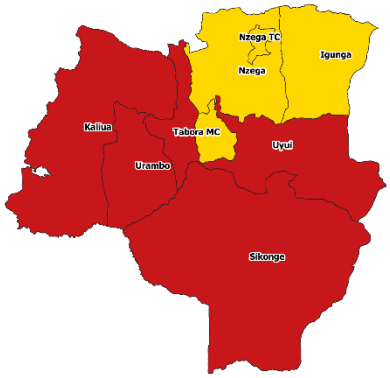
23. Singida

Strata	District	Population	
Very low	Singida DC	253,767	15%
	Singida MC	181,207	11%
		434,974	**26%**
low	Ikungi DC	326,690	19%
	Iramba DC	389,453	23%
	Manyoni DC	237,545	14%
	Mkalama DC	152,495	9%
		1,106,183	**65%**
moderate	Itigi DC	151,318	9%
Total		**1,692,475**	**100%**

24. Songwe

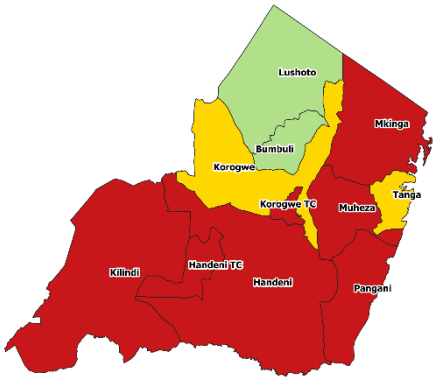
Strata	District	Population	
Very low	Mbozi DC	530,557	42%
	Tunduma TC	188,062	15%
		718,619	**56%**
moderate	Ileje DC	135,289	11%
	Momba DC	251,515	20%
	Songwe DC	168,946	13%
		555,751	**44%**
Total		**1,274,370**	**100%**

25. Tabora



Strata	District	Population	
moderate	Igunga DC	462,321	16%
	Nzega DC	487,938	17%
	Nzega TC	85,044	3%
	Tabora MC	258,966	9%
		1,294,269	**46%**
high	Kaliua DC	560,916	20%
	Sikonge DC	221,233	8%
	Urambo DC	246,935	9%
	Uyui DC	501,212	18%
		1,530,297	**54%**
Total		**2,824,566**	**100%**

26. Tanga



Strata	District	Population	
low	Bumbuli DC	178,809	7.4%
	Lushoto DC	371,504	15.4%
		550,313	**22.9%**
moderate	Korogwe DC	268,625	11.2%
	Tanga CC	297,135	12.3%
		565,760	**23.5%**
high	Handeni DC	354,358	14.7%
	Handeni TC	101,264	4.2%
	Kilindi DC	333,248	13.8%
	Korogwe TC	81,753	3.4%
	Mkinga DC	136,553	5.7%
	Muheza DC	220,734	9.2%
	Pangani DC	62,485	2.6%
		1,290,394	**53.6%**
Total		**2,406,467**	**100%**

(Source: NMCP, TEMT)

Annex 3: Work plan

SO	SA	SDM#	SDM	2021				2022				2023				2024	2025
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
Integrated malaria vector control																	
1	**Reduce malaria parasites transmission by maintaining recommended evidence-based vector control interventions according to the targeted malaria risk strata**																
	1.1		Ensure universal access to LLINs according to malaria transmission settings														
		1.1.1	Implement a targeted mass replacement campaign when required according to accessibility and epidemiological risk		x	x			x	x			x	x		x	x
		1.1.2	Implement school net program LLIN (SNP) distribution to keep up LLIN coverage in the general population			x	x			x	x			x	x	x	x
		1.1.3	Implement LLIN distribution through RCH to protect biological vulnerable groups, infants and pregnant women, and to keep up net coverage in the general population	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		1.1.4	Implement LLIN alternative delivery system to special population groups and special situation	x	x			x	x			x	x			x	x
		1.1.5	Create enabling environment for LLINs availability in commercial market.		x	x	x										
	1.2		Consolidate and expand IRS in epidemiologically and operationally suitable areas														
		1.2.1	Create an enabling environment to plan, implement and conduct quality IRS by using community engagement including guidelines, training packages, monitoring system, environmental compliance, pesticide management plan			x	x			x	x			x	x	x	x
		1.2.2	Build capacity of council (CHMT) and private sector to plan, manage, implement, and `evaluate IRS.		x				x				x			x	x
		1.2.3	Application of targeted IRS through community participation and engagement in the high malaria risk councils with resilient malaria transmission as malaria burden reduction and insecticide mitigation tool	x			x	x			x	x				x	x
		1.2.4	Application of focal IRS as a response to residual malaria transmission in the very low malaria risk councils targeting elimination														
	1.3		Implement appropriate, sustainable and quality Larval Source Management (Larviciding, Environmental Management and Biological control) interventions in suitable epidemiological and operational areas														
		1.3.1	Create an enabling environment to plan, implement quality LSM in targeted areas by using community engagement (guidelines, training packages, monitoring system, environmental compliance, biolarviciding management plan).	x	x	x	x										
		1.3.2	Build capacity of Council (CHMT) and private sector to plan, manage, implement, and evaluate LSM				x				x				x	x	x
		1.3.3	Application of appropriate, sustainable and quality bio-larvicides according to guidelines and standard operating procedures		x		x		x		x		x		x	x	x
		1.3.4	Create partnership to ensure that environmental related elements of LSM are part of community based, councils and private sector LSM plans	x	x	x	x			x				x			
	1.4		Provide a strategic framework for coordination and continuous assessment for the implementation of evidence-based Vector control innovations														
		1.4.1	Encourage partners to research and develop evidence for novel vector control tools for scale up in the country.		x		x		x		x		x		x	x	x

SO	SA	SDM#	SDM	2021				2022				2023				2024	2025
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
		1.4.2	Implementation of Insecticide Resistance Management plan	x				x				x				x	x
Malaria Diagnosis, Treatment and Preventive Therapies																	
2	To prevent the occurrence of mortality related to malaria infection through universal access to appropriate diagnosis and treatment and targeted provision of preventive therapies for vulnerable groups																
	2.1	Provide universal access to appropriate quality and timely malaria diagnosis to all eligible (symptomatic and asymptomatic) people according to the guidelines 2021															
		2.1.1	Provide high-standard, accessible, affordable, equitable, and quality-assured malaria testing services for people seeking treatment in the public health sector.	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.1.2	Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to people seeking treatment in the private sector	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.1.3	Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to patients seeking treatment fever managements beyond the operational health facilities			x	x	x	x								
		2.1.4	Provide quality-assured and quality control in all malaria testing services	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.1.5	Introduce evidence-based, innovative diagnostic tools/system for malaria detection and differential diagnosis of other pathogens causing febrile illnesses				x				x				x	x	x
	2.2	Provide universal access to appropriate, quality and timely treatment to all people with malaria.															
		2.2.1	Provide highly efficacious, accessible, affordable, equitable, and quality-assured antimalarial to patients seeking treatment in the public sector	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.2.2	Facilitate the provision of accessible, affordable, and quality-assured antimalarial to patients seeking treatment in the private sector	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.2.3	Facilitate the provision of high-standard, accessible, affordable, and quality-assured management to patients seeking treatment beyond the operational health facilities in identified suitable operational areas	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.2.4	Provide high-quality severe malaria management services by skilled providers in public, private and community.	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	2.3	Provide appropriate and effective services to reduce the risk of malaria infection and its complications among populations biologically and socioeconomic vulnerable to malaria.															
		2.3.1	Increase the uptake of IPTp3+ and CPT among HIV positive pregnant women in health facilities in low, moderate and high transmission areas to reduce vulnerability in pregnancy	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.3.2	Introduce the provision of SP for IPTi during vaccination schedule during infancy in high malaria risk areas	x	x	x	x	x	x	x	x	x	x	x	x		
		2.3.3	Introduce targeted antimalarial preventive therapies to identified vulnerable groups within high malaria risk areas		x		x		x		x		x		x	x	x
		2.3.4	In the event of the introduction of a malaria vaccine, the country is able to rapidly scale up its use in suitable epidemiological and operational areas				x				x				x		
	2.4	Deploy appropriate malaria case management and preventive therapies interventions in suitable epidemiological and operational areas, in the event of emergency situations, and in peculiar population groups to reduce the risk of severe morbidity and mortality															

SO	SA	SDM#	SDM	2021				2022				2023				2024	2025
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
		2.4.1	Provide appropriate initiatives as response to emergency situation including outbreak	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.4.2	Introduce reactive case detection as part of case based surveillance in identified low transmission areas	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		2.4.3	Introduce the provision of selected diagnosis and treatment approaches for risk mitigation and burden reduction through focal screening and treatment and mass drug administration in suitable epidemiological and operational areas		x		x		x		x		x		x	x	x
		2.4.4	Improve malaria case management for specific population groups to be targeted with special initiatives		x	x	x	X	x	x	x						
Surveillance, Monitoring & Evaluation																	
3	To provide timely and reliable information on malaria and its control needed to take appropriate actions in different transmission risk and ensure resources are used in the most cost-effective manner																
	3.1	Strengthen comprehensive malaria surveillance and response in health facilities for improved programmatic performance															
		3.1.1	Strengthen malaria surveillance and response across all epidemiological strata by improving the use of quality routine HMIS malaria data to generate reliable malaria indicators	x	x	x	x	X	x	x	x	x	x	x	x	x	x
		3.1.2	Strengthen capacity for malaria epidemics detection, investigation and containment at Council and health facility level in epidemic prone areas	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		3.1.3	Implementation of Case Based Surveillance to support elimination interventions in very low malaria transmission risk areas	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	3.2	Strengthen malaria framework for collecting, processing and storing essential indictors from periodic service delivery initiatives and programmatic surveys in the communities															
		3.2.1	Coordinate and conduct representative population surveys according to SME plan		x	x							x	x			x
		3.2.2	Strengthen longitudinal vigilance of malaria parasitaemia in sentinel population: pregnant women at ANC	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		3.2.3	Conduct standard antimalarial Therapeutic Efficacy Study (TES) in sentinel sites as per WHO standard protocol		x				x				x			x	x
		3.2.4	Strengthen longitudinal monitoring of mosquito population dynamics in the sentinel sites	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		3.2.5	Strengthen longitudinal monitoring of efficacy and effectiveness of insecticides in national representative sentinel sites		x				x				x			x	x
		3.2.6	Coordinate the collection, analysis, interpretation and use of the programmatic monitoring of vector control initiatives (including LLINs, IRS and LSM) data		x				x				x			x	x
		3.2.7	Establish capacity for malaria related molecular surveillance for programmatic monitoring of parasites and vector dynamics						x	x	x	x					
	3.3	Strengthen a comprehensive malaria strategic information system to generate knowledge for evidence-based planning and decision making at all levels															
		3.3.1	Strengthen malaria data management capacity and the national repository arrangements to enable evidence-based decision making at all levels	x				x				x				x	x
		3.3.2	Conduct a comprehensive periodic stratification of malaria transmission risk in all councils for improved targeting of interventions	x	x	x	x										

SO	SA	SDM#	SDM	2021				2022				2023				2024	2025
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
		3.3.3	Undertake periodic malaria program reviews and evaluation of the implementation of malaria strategic plan											x	x		
		3.3.4	Create conducive environment for continuous collaboration with research, academia institutions and research capacities at subnational levels to facilitate evidence based decision making at all levels.	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Commodities and Logistic Management																	
4	Maintain timely availability of safe and quality malaria commodities and supplies at the delivery points																
	4.1	Promote partnership to ensure malaria commodities are available in all service delivery points in the right amount and when needed															
		4.1.1.	Carry out annual quantification and gap analysis for all malaria commodities and supplies				x				x				x	x	x
		4.1.2	Provide conducive partnership to properly conduct procurement of malaria commodities and supplies			x				x				x		x	x
		4.1.3	Enhance supply chain of insecticide treated materials, insecticides and larvicides, from point of entry/supplier to service delivery point.	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		4.1.4	Enhance logistic management of medicines, diagnostics and other malaria commodities within the health care facilities including dispensing	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	4.2	Promote partnership to ensure that all malaria commodities used at service delivery points are quality assured															
		4.2.1	To strengthen commodities quality check for commodities for vector control and case management	x		x		x		x		x		x		x	x
		4.2.2	Post Market surveillance for antimalarial medicines and malaria testing devices		x		x		x		x		x		x	x	x
		4.2.3	Post Market surveillance for vector control commodities, LLIN, insecticides and larvicides			x		x		x		x		x		x	x
	4.3	Promote partnership to ensure that all malaria commodities used at service delivery points are safe															
		4.3.1	Facilitate the relevant regulatory authorities, TMDA, to conduct passive pharmacovigilance for malaria medicine.	x				x				x				x	x
		4.3.2	Facilitate the relevant regulatory authorities, NIMR and TPRI, to conduct continuous evaluation use practices and re–evaluation of potentially adverse effects to people and the environment		x				x				x			x	X
Social Behavioural Change and Advocacy																	
5	To strengthen an enabling environment where individuals at risk from malaria are empowered to protect themselves and their families from malaria and seek proper and timely malaria-treatment																
	5.1	Reinforce and update knowledge and practice amongst all community members about appropriate malaria prevention, testing and treatment, promote desired positive behaviors and social norms about healthy behaviours															
		5.1.1	Improve capacity of healthcare workers to effectively provide accurate and relevant information to patients, pregnant women and caretakers of under-five on desired behaviors for malaria prevention and treatment		x	x			x	x				x	s	x	x

SO	SA	SDM#	SDM	2021				2022				2023				2024	2025
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
		5.1.2	Improve capacity of Community Health Workers (CHWs) to effectively provide accurate and relevant malaria information during their interaction with community members				x				x				x		
		5.1.3	Develop and implement mass media campaign with key target audience at different levels using different communication channels to maintain knowledge level and spark actions	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	5.2		Maintain high knowledge and improve good practices amongst vulnerable groups with elevated risk of malaria infection so that they know about their specific risk, prevention and treatment options available to them														
		5.2.1	Develop and implement SBC outreach program for marginalized and disadvantaged vulnerable groups in all-malaria transmission areas	s	s												
		5.2.2	Develop and implement school-based SBC programs to provide malaria messages					s	s	s	s						
		5.2.3	Addressing potential gender-related barriers for uptake of malaria interventions at the household and community level	s	s	s	s										
	5.3		Encourage communities to utilize and implement community-based malaria control and elimination initiatives														
		5.3.1	Create an enabling environment to establish malaria community based intervention package that include promotion, LSM, CmCM and mCBS (including guideline, training package and M&E supervision systems)			s	s	s	s								
	5.4		Strengthen Public Private Partnership to maximize SBC efforts and ensure consistence in fight against malaria														
		5.4.1	Strengthen existing malaria SBC fora to ensure coordinated and harmonized implementation of the SBC strategy to all implementing partners at all levels including private sector		x				x				x			x	x
	5.5		Increase visibility for specific malaria campaigns to politicians, communities and general public so that malaria become an agenda and priority at all levels														
		5.5.1	Strengthening advocacy for malaria to high level leaders, influential people, regional and council leaders to raise the profile of malaria, get support and prioritization of malaria interventions at all levels	x				x				x					
		5.5.2	Implement specific malaria campaigns to increase visibility		x		x		x		x						
Leadership, Partnership and Resource Mobilization																	
6	To strengthen efficient and effective coordination for implementation of malaria strategies through accountable partnership																
	6.1		To provide effective leadership and governance for the implementation of malaria control and elimination interventions at all levels														
		6.1.1	Strengthen human resources capacity for effective strategic plan implementation at national and LGA levels	x		x		x		x		x		x		x	x
		6.1.2	Strengthen and sustain the country with appropriate evidence based malaria control strategy, that will guide stakeholders and implementers towards the achievements of its goal								x	x					
		6.1.3	Enhance well structured, coordinated and harmonized supervision and verification system involving implementing entities at various levels		x	x	x	x									

SO	SA	SDM#	SDM	2021				2022				2023				2024	2025
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
		6.1.4	Improve coordination and governance structures at all levels to strengthen coordination, communication, and close follow up of all malaria related interventions	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	6.2		Raise the profile of malaria amongst policy and decision makers at all levels so that national, regional and district plans include appropriate interventions and sufficient budget to implement the malaria strategic plan														
		6.2.1	Sustain comprehensive business and operational plans for malaria control interventions			x	x	x		x							
		6.2.2	Strengthen the resource mobilization mechanisms for sustainable implementation of malaria strategies	x				x				x				x	x
		6.2.3	Strengthen NMCP capacity to successfully implement planned malaria intervention at all levels		x	x			x	x			x	x			
		6.2.4	Strengthen the malaria component of annual comprehensive council health plans				x				x				x	x	x
	6.3		Promote harmonized multi-sectoral approach and cross-border initiative for malaria control														
		6.3.1	Customize GLMI / EAC & DRC strategic framework for cross border collaboration on malaria control			x		x									
		6.3.2	Develop action plans with relevant Ministries outlining multi-sectoral malaria control intervention and targets		x		x										

Annex 4: Monitoring and evaluation matrix (Performance Framework)

Integrated Malaria Vector Control								
1. Strategic Objective	Impact Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Reduce malaria parasites transmission by maintaining recommended evidence-based vector control interventions according to the targeted malaria risk strata	Annual Entomological Inoculation Rate (EIR)	Formula The product of human biting rate (HBR) multiplied by Plasmodium falciparum sporozoite positive rate (PfSR) from the caught mosquitoes and the 365 days in a year.	EIR It is a proxy indicator for malaria transmission risk. The indicator measures the number of infective bites received per person in a given limit of time in a human population.	National	2.90	1.00	0.10	NIMR/ NMCP
				Very Low	0.13	0.12	0.10	
				Low	0.60	0.30	0.10	
				Moderate	2.90	1.00	0.10	
				High	2.90	1.00	0.10	
				Urban	0.13	0.12	0.10	
1.1 Strategic Approach	Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Ensure universal access to LLINs according to malaria transmission settings	Proportion of the household population with access to an LLIN within their household (assuming one LLIN for every two people in a household)	Numerator No individuals who could sleep under LLIN if each LLIN in the household were used by two people Denominator Number of individuals who spent the previous night in the surveyed households	Population access to a LLINs is a representative indicator for population access to a LLINs. It assumed that household population could sleep under a LLINs if every LLIN in the household were used by two people. It is a proxy indicator for LLINs use in the household.	National	63%	80%	95%	MIS
				Very Low	60%	80%	85%	
				Low	57%	80%	85%	
				Moderate	62%	80%	85%	
				High	64%	80%	85%	
				Urban	72%	80%	85%	

1.1	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
1.1.1	Implement a targeted mass replacement campaign when required according to accessibility and epidemiological risk	LLIN distributed through targeted replacement campaigns (cumulative)	Numerator Cumulative number of LLINs Distributed through mini (targeted) MRC Denominator NA	It measures program performance and population access to a LLINs and it is a representative indicator for population access to a LLINs. It is a proxy indicator for LLINs use in the household.	National Very Low Low Moderate High Urban	NA NA NA NA NA NA	3M TBD TBD TBD TBD TBD	5.3M TBD TBD TBD TBD TBD	NMCP Composite Database
1.1.2	Implement school net program LLIN (SNP) distribution to keep up LLIN coverage in the general population	LLINs distributed through Schools (cumulative)	Numerator Cumulative number. of LLINs distributed through schools Denominator NA	It measures program performance and population access to a LLINs and is a representative indicator for population access to a LLINs. It is a proxy indicator for LLINs use in the household.	National Very Low Low Moderate High Urban	1.3M NA 0 1,253,300 336,669 0	13.5M NA 2,168,955 3,997,044 6,069,507 1,272,216	22.7M NA 3,655,890 6,737,233 10,230,482 2,144,388	NMCP Composite Database
1.1.3	Implement LLIN distribution through RCH to protect biological vulnerable groups, infants and pregnant women, and to keep up net coverage in the general population	Proportion of infants provided with LLINs during MR1 vaccine & Proportion of pregnant women provided with LLINs during first ANC	Numerator No. of infants received LLINs during Measles/Rubella vaccine & No. of pregnant women received LLINs during first ANC Denominator No of infants provided with MR1 vaccine & No of pregnant women attended first ANC.	It measures increase nets coverage and raise population access of LLINs, representative indicator for population access to a LLINs. It is a proxy indicator for LLINs use in the household.	National	78% (Infants) 88% (PW)	100% (Infants) 100% (PW)	100% (Infants) 100% (PW)	HMIS/ DHIS2
1.1.4	Implement LLIN alternative delivery system to special population groups and special situation	LLINs distributed through alternative channel.	Numerator Number of LLINs distributed through alternative channels Denominator NA	It measures increase nets coverage and raise population access of LLINs, representative indicator for population access to a LLINs. It is a proxy indicator for LLINs use in the household.	National	NA	100%	100%	NMCP Reports
1.1.5	Create enabling environment for LLINs availability in commercial market.	Proportion of LLINs distributed through commercial channels	Numerator Number of LLINs distributed through commercial channels Denominator Total LLINs distributed through different channels	It measures increase nets coverage and raise population access of LLINs, representative indicator for population access to a LLIN. .It is a proxy indictor for LLINs use in the household.	National	10%	13%	15%	MIS
1.2 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
			Numerator		National	3%	25%	25%	NMCP Reports

Consolidate and expand IRS in epidemiologically and operationally suitable areas		Percent of house structures in the country sprayed with recommended insecticide(s) during the past 12 months	Number of house structures sprayed with recommended insecticides during the past 12 month Denominator Number of targeted sprayable structures in the eligible councils found in the country.	The indicator provides the national coverage of houses structures sprayed for IRS in all 61 eligible councils.					
1.2	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
1.2.1	Create an enabling environment to plan, implement and conduct quality IRS by using community engagement including guidelines, training packages, monitoring system, environmental compliance, pesticide management plan	Number of councils planned using updated guidelines, SOPs, training packages, proper monitoring and environmental compliance during quality IRS implementation.	Numerator This is the number of councils planned using updated guidelines, SOPs, training packages, proper monitoring and environmental compliance during quality IRS implementation. Denominator NA	The indicator indicates the preparedness for delivery IRS services	National Very Low Low Moderate High Urban	6 NA NA NA 6 NA	30 NA NA NA 30 NA	61 NA NA NA 61 NA	Malaria composite database
1.2.2	Build capacity of council (CHMT) and private sector to plan, manage, implement, and evaluate IRS.	Proportion of eligible Councils with capacity to plan, manage, implement and evaluate IRS	Numerator Number of councils capacitated to implement quality IRS with recommended insecticide. Denominator Number of councils eligible for IRS in the country	The indicator takes into consideration councils eligible for IRS	National Very Low Low Moderate High Urban	26 NA NA NA 26 NA	26 NA NA NA 26 NA	36 NA NA NA 36 NA	Malaria composite database
1.2.3	Application of targeted IRS through community participation and engagement in the high malaria risk councils with resilient malaria transmission as malaria burden reduction and insecticide mitigation tool	Proportion of house structures sprayed through community participation and engagement	Numerator House structures sprayed through community participation and engagement Denominator House structures eligible for spraying through community participation and engagement	The indicator takes into consideration number of councils implementing IRS through community participation and engagement	National	98%	98%	98%	Malaria composite database
1.2.4	Application of focal IRS as a response to residual	Proportion of investigated eligible transmission foci implementing focal IRS	Numerator Foci with implemented focal IRS Denominator	The indicator monitor capacity to implement focus investigation and response	Very Low	NA	25%	50%	CBS information system

	malaria transmission in the very low malaria risk councils targeting elimination		Number of foci identified eligible for focal IRS						
1.3 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Implement appropriate, sustainable and quality Larval Source Management (Larviciding, Environmental Management and Biological control) interventions in suitable epidemiological and operational areas		Proportion of larval density reduced in sentinels councils implementing biolarviciding	Numerator Number of larval collected after application of biolarviciding Denominator Number of mosquito larval collected before application of biolarviciding	The indicator measure the reduction of larval density as a contribution to interruption of malaria transmission	National	NA	50%	75%	Malaria composite database
1.3	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
1.3.1	Create an enabling environment to plan, implement quality LSM in targeted areas by using community engagement (guidelines, training packages, monitoring system, environmental compliance, biolarviciding management plan).	Proportion of sentinel councils implementing LSM able to monitor and report larval density	Numerator sentinel councils implementing LSM able to monitor and report regularly larval density Denominator sentinel councils implementing LSM	The indicator monitor the preparedness to deliver quality LSM in targeted areas	National	0	62 (100%)	62 (100%)	NMCP Reports
1.3.2	Build capacity of Council (CHMT) and private sector to plan, manage, implement, and evaluate LSM	Number of targeted councils supervisors trained to implement effective bio-larviciding	Numerator No. of cities and municipal councils implemented bio-larvicides Denominator Total number of cities and municipal councils targeted for bio- larvicides		National	Not Available	25	25	PO-RALG
1.3.3	Application of appropriate, sustainable and quality bio-larvicides according to guidelines and standard operating procedures	Proportion of identified breeding sites treated with quality bio-larviciding according to SOP	Numerator No of identified breeding sites treated with quality bio-larviciding according to SOP Denominator Number of identified breeding sites	Implementation of LSM according to guidelines is the basic requirement for quality larviciding operations	National	NA	80%	90%	PO-RALG

1.3.4	Create partnership to ensure that environmental related elements of LSM are part of community based, councils and private sector LSM plans	Proportion of environmental Impact assessment/audit approved in infrastructure/development projects which included requirement for diseases vector control.	Numerator Approved environmental impact assessment/audit report(s) with requirements for disease vector control Denominator Number of EIA submitted to NEMC	The indicator monitors the multi-sectoral engagement in reducing larval habitats	National	NA	80%	90%	NEMC Report
1.4 Strategic Approach		Outcome Indicator	Indicator Description						
Provide a strategic framework for coordination and continuous assessment for the implementation of evidence-based Vector control innovations		Number of new innovative evidence-based vector control tool introduced and adopted for malaria vector in Tanzania	Numerator Number of innovative tools adopted Denominator NA	This indicator addresses challenges of insecticides resistance, enhance effectiveness of vector intervention tools	National	2	2	5	NMCP Reports
1.4	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
1.4.1	Encourage partners to research and develop evidence for novel vector control tools for scale up in the country.	Number of new innovative vector control tools piloted in the country (cumulative)	Number of new novel vector control tools piloted	This indicator monitor practical solutions for mitigating or preempting insecticides resistance, and provides way forward to effectiveness of vector intervention tools	National	1	2	4	NMCP Reports
1.4.2	Implementation of Insecticide Resistance Management plan	Number of insecticides molecules with different mode of action used for IRS/LLIN per year	Numerator Number of insecticides molecules with different mode of action used for IRS/LLIN per year Denominator 1	This indicator it indicates types of insecticides with different mode of action used for IRS/LLIN in the attempt to mitigate development of resistance	National	2 (PBO/Sumishield)	1	1	NMCP Reports

Malaria Diagnosis, Treatment and Preventive therapies

2. Strategic Objective	Impact Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
To prevent the occurrence of mortality related to malaria infection through universal access to appropriate diagnosis and treatment and targeted provision of	Malaria Mortality rate in Health facility per 100,000.	Numerator Number of death due to malaria being underlying cause. Denominator Number of population at risk	Avoiding unnecessary deaths is the primary objective of improved malaria case management services.	National	4 per 100,000	3 per 100,000	1 per 100,000	HMIS/ DHIS2
				Very Low	0.6	0.3	0.0	
				Low	1.0	0.5	0.0	
				Moderate	5.8	3.0	2.0	
				High	5.6	3.0	2.0	

preventive therapies for vulnerable groups				Urban	4.3	2.0	1.0	
2.1 Strategic Approach	Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Provide universal access to appropriate, quality and timely treatment to all people with malaria.	% of U5 children with fever who had a malaria test the same or next day after onset of a disease	Numerator	This indicator is a standardized globally recognized indicator for assessing access to test services	National	43%	75%	85%	MIS
				Very Low	33%	70%	85%	
		< 5children who tested for malaria the same or next day after onset of a disease		Low	15%	70%	85%	
		Denominator		Moderate	46%	70%	85%	
		<5children with history of fever in the two weeks prior the survey		High	52%	70%	85%	
				Urban	69%	75%	85%	
2.1	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
2.1.1	Provide high-standard, accessible, affordable, equitable, and quality-assured malaria testing services for people seeking treatment in the public health sector.	Proportion of malaria cases tested in the public healthcare delivery sector out of total OPD visits (testing ratio)	Numerator	Testing ratio is a proxy indicator of malaria testing. It has been selected due to the impossibility to use suspect malaria as denominator	National	51%	60%	70%	HMIS/ DHIS2
					Very Low	20%	40%	50%	
			OPD cases tested for malaria in public health facility		Low	29%	50%	60%	
			Denominator		Moderate	57%	75%	75%	
			OPD cases attended in public health care delivery		High	70%	75%	80%	
					Urban	42%	75%	75%	
2.1.2	Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to people seeking treatment in the private sector	Proportion of malaria cases tested in the private healthcare delivery sector out of total OPD visits	Numerator	Testing ratio is a proxy indicator of malaria testing. It has been selected due to the impossibility to use suspect malaria as denominator	National	59%	65%	70%	HMIS/ DHIS2
					Very Low	42%	45%	50%	
			OPD cases tested for malaria private health care in delivery		Low	56%	60%	65%	
			Denominator		Moderate	73%	75%	80%	
			OPD cases attended in private health care deliver		High	69%	75%	80%	
					Urban	56%	75%	75%	
2.1.3	Facilitate the provision of high-standard, accessible, affordable, and quality-assured testing to patients seeking treatment fever managements beyond the operational health facilities	Proportion of malaria tests performed in community outlets (ADDO and CmCM)	Numerator	This indicator will monitor the additional value of community based testing as an attempt to reach universal access to malaria diagnostics	National	NA	20%	30%	HMIS/ DHIS2
			Number of malaria tests performed in community outlets (ADDO and CmCM)					
			Denominator					
			Total number of reported malaria tests					
2.1.4	Provide quality-assured and quality control in all malaria testing services	Proportion of health facilities scored above 75% of TAQC services with RDT	Numerator	The indicator monitors mentoring and coaching activities during routine assessment	National	14%	75%	85%	HMIS/DHIS2
			Number of Health Facilities scoring above 75% in TAQC assessment					
			Denominator					
			Number of Health Facilities assessed for TAQC					
2.1.5			Numerator		National	NA			NMCP

	Introduce evidence-based, innovative diagnostic tools/system for malaria detection and differential diagnosis of other pathogens causing febrile illnesses	Number of initiatives introducing evidence based innovative diagnostics tools	Number of innovative diagnostics tools introduced Denominator Number of innovative diagnostics tools	The indicator monitors the preparedness of the health system to improve diagnostic capability			1 new diagnostic tool	2 new diagnostic tool	Reports
2.2 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Provide universal access to appropriate, quality and timely treatment to all people with malaria		% children under 5 with fever who were treated with recommended antimalarial the same or next day following the onset of fever	Numerator Children with fever who received recommended antimalarial the same or next day. Denominator Children under age of 5 with fever who were treated the same or next day following the onset of fever	Children under five years of age is a representative vulnerable group to assess the access to appropriate, quality and timely treatment. The indicator is usually measured in national and regional representative household surveys (MIS) every 2-3 years.	National Very Low Low Moderate High Urban	35% 2% 27% 35% 45% 21%	40% 10% 40% 45% 60% 40%	50% 20% 50% 50% 70% 50%	MIS
2.2	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
2.2.1	Provide highly efficacious, accessible, affordable, equitable, and quality-assured antimalarial to patients seeking treatment in the public sector	Proportion of malaria confirmed patients dispensed with a QAACT in public health facilities	Numerator Malaria confirmed cases received QAACT in public health facility Denominator Malaria confirmed cases in public health facility	The output indicator intends to measure the accountability of antimalarial use in the public sector	National Very Low Low Moderate High Urban	1:1.2 1:3 1:2 1:1 1:1 1:1	1:1 1:1.5 1:1.5 1:1 1:1 1:1	1:1 1:1 1:1 1:1 1:1 1:1	HMIS/ DHIS2
2.2.2	Facilitate the provision of accessible, affordable, and quality-assured antimalarial to patients seeking treatment in the private sector	Proportion of malaria confirmed patients dispensed with a QAACT in private health facilities	Numerator malaria confirmed cases received QAACT in private health facility Denominator malaria confirmed cases in private health facility	The output indicator intends to measure the accountability of antimalarial use in the private sector	National Very Low Low Moderate High Urban	1:9 1:1.7 1:2 1:1.5 1:0.8 1:1.1	1:1 1:1 1:1 1:1 1:1 1:1	1:1 1:1 1:1 1:1 1:1 1:1	HMIS/ DHIS2
2.2.3	Facilitate the provision of high-standard, accessible, affordable, and quality-assured management to patients seeking treatment beyond the operational health facilities in identified suitable operational areas	Proportion of patients treated within the CmCM framework	Numerator Patients treated within the CmCM framework Denominator Malaria positive patients detected within the CmCM framework	CmCM framework is expected to report through DHIS2. The outputs will be visualized in the malaria interactive framework	National	NA	5%	10%	HMIS/ DHIS2
2.2.4	Provide high-quality severe malaria management services by skilled providers in public, private and community.	Malaria Case fatality rate	Numerator Number of deaths reported in health facilities attributed to malaria	CFR is an useful indicator to monitor appropriateness of severe malaria case management within the health facilities	National Very Low Low	0.6% 0.6% 0.6%	0.5% 0.5% 0.5%	0.4% 0.4% 0.4%	HMIS/ DHIS2

			Denominator		Moderate	1.0%	0.8%	0.6%	
			Number of severe malaria admissions reported in the same facilities		High	0.8%	0.7%	0.6%	
					Urban	0.7%	0.6%	0.5%	
2.3 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Provide appropriate and effective services to reduce the risk of malaria infection and its complications among populations biologically and socioeconomic vulnerable to malaria.		% of women with live birth in the previous two years who received three doses or more of SP (IPTp3+)	Numerator	This is a coverage indicator measuring the proportion of ANC reached with IPTp3 in delivering the service	National	26%	70%	85%	MIS
					Very Low	30%	70%	75%	
			Number of live birth in the previous two years who received three doses or more of SP (IPTp3+)		Low	20%	70%	75%	
			Denominator		Moderate	25%	70%	75%	
			Number of live birth in the previous two years.		High	30%	70%	75%	
					Urban	42%	70%	75%	
2.3	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
2.3.1	Increase the uptake of IPTp3+ and CPT among HIV positive pregnant women in health facilities in low, moderate and high transmission areas to reduce vulnerability in pregnancy	% of pregnant women attending ANC who receive IPTp2 and IPTp3	Numerator	This is a performance indicator measuring the efficiency of ANC in delivering the service	National	71%	90%	95%	HMIS/ DHIS2
					Very Low	77%	NA	NA	
			pregnant women attended ANC who receive IPTp2 and IPTp3		Low	75%	95%	95%	
			Denominator		Moderate	71%	95%	95%	
			pregnant women attended ANC		High	70%	95%	95%	
					Urban	76%	95%	95%	
2.3.2	Introduce the provision of SP for IPTi during vaccination schedule during infancy in high malaria risk areas	Proportion of infants who received IPT during vaccination schedule in selected epidemiological strata	Numerator	Children aged 3-59 months are the target for the intervention and the intervention coverage will be based on the targeted group	National	NA	65%	75%	HMIS/DHIS2
					Very Low	NA	NA	NA	
			Infant received IPTi during vaccination schedule in selected epidemiological strata.		Low	NA	NA	NA	
			Denominator		Moderate	NA	NA	NA	
			Infant attending on vaccination schedule in selected epidemiological strata.		High	0	65%	75%	
					Urban	NA	NA	NA	
2.3.3	Introduce targeted antimalarial preventive therapies to identified vulnerable groups within high malaria risk areas	Proportion of risk group population who received antimalarial chemoprevention among all targeted risk group in selected epidemiological strata	Numerator	Specific risk groups to be targeted will be identified in year 1 of this strategic plan	National	NA	25%	50%	NMCP Reports
					Very Low	NA	TBD	TBD	
			Risk group received chemoprevention among the targeted in epidemiological strata		Low	NA	TBD	TBD	
			Denominator		Moderate	NA	TBD	TBD	
			Risk group received malaria chemoprevention among the targeted in epidemiological strata		High	NA	TBD	TBD	
					Urban	NA	TBD	TBD	
2.3.4	In the event of the introduction of a malaria vaccine, the country is able to rapidly scale up its use in	Number of initiatives Vaccine/introduced	Numerator	The indicator monitors the preparedness of the health system for the introduction of malaria vaccine	Very Low	NA	TBD	TBd	TBD
					Low				
			Denominator		Moderate				
					High				

	suitable epidemiological and operational areas				Urban				
2.4 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Deploy appropriate malaria case management and preventive therapies interventions in suitable epidemiological and operational areas, in the event of emergency situations, and in peculiar population groups to reduce the risk of severe morbidity and mortality		Proportion of identified people reached with special/specific initiatives	Numerator Number of identified people reached with special interventions Denominator People identified for special initiatives	This indicator measures the ability to identify risk population in specific situations. The specific targets will be defined after identification.	National	NA	80%	80%	NMCP Report
2.4	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
2.4.1	Provide appropriate initiatives as response to emergency situation including outbreak	People treated within 2 weeks from detected and notified malaria epidemics	Numerator Number of People treated within 2 weeks from detected and notified malaria epidemics Denominator NA	The intervention is recommended as an immediate response to a detected outbreak. If no notifications received the indicator will be "0". Targets over the NMSP are not appropriate	National	NA	TBD	TBD	IDSR
2.4.2	Introduce reactive case detection as part of case based surveillance in identified low transmission areas	Number and proportion of people actively screened	Numerator Number of people screened for malaria Denominator Number of people targeted for active screening	The indicator shows the outputs and magnitudes of screening the targeted intervention done in very low transmission areas.	National	NA	80%	80%	NMCP Report
2.4.3	Introduce the provision of selected diagnosis and treatment approaches for risk mitigation and burden reduction through focal screening and treatment and mass drug administration in suitable epidemiological and operational areas	Proportion of people treated in epidemiological and operational areas identified	Numerator People treated in epidemiological and operational areas identified Denominator People targeted in epidemiological and operational areas identified	The intervention is recommended as an immediate response in identified foci in very low transmission. If no foci are targeted, the indicator will be "0". Targets over the NMSP are not appropriate	National	NA	TBD	TBD	NMCP Composite Database
2.4.4	Improve malaria case management for specific population groups to be targeted with special initiatives	People from specific population groups treated in identified epidemiological and operational areas	Numerator People from specific population groups treated in identified epidemiological and operational areas Denominator NA	The intervention targets identified special population groups and special situations through outreach services. If no identified needs the indicator will be 0.	National	NA	TBD	TBD	NMCP Composite Database

Malaria Surveillance, Monitoring and Evaluation

3. Strategic Objective		Impact Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
To provide timely and reliable information on malaria and its control needed to take appropriate actions in different transmission risk and ensure resources are used in the most cost-effective manner		Proportion of councils with very low malaria transmission risk	Numerator	Increased proportion of councils with very low malaria transmission risk will indicate progress towards achieving malaria elimination.	National	20%	25%	35%	Malaria Stratification Report
					Very Low	36 (20%)	25%	35%	
			Number of councils with very low malaria transmission risk		Low	32 (17%)	25%	30%	
			Denominator		Moderate	52 (28%)	25%	25%	
			Number of all councils in mainland Tanzania		High	64 (35%)	25%	10%	
					Urban	NA			
3.1 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Strengthen comprehensive malaria surveillance and response in health facilities for improved programmatic performance		Proportion of health facilities scoring 75% and above on data quality according to MSDQI DQA checklist	Numerator	Proportion of health facilities with quality data among the assessed is a proxy of the status of data quality for all facilities in the country. This indicator reflects to what extent our data can be trusted to guide decisions.	National	65%	75%	85%	HMIS/ DHIS2
			Number of health facilities scoring 75% and above on data quality according to MSDQI DQA checklist						
			Denominator						
			Number of health facilities assessed on data quality according to MSDQI DQA checklist						
3.1	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
3.1.1	Strengthen malaria surveillance and response across all epidemiological strata by improving the use of quality routine HMIS malaria data to generate reliable malaria indicators	Proportion of health facilities visited for MSDQI assessed for DQA	Numerator	This indicator ascertains the representativeness of the percentage of health facilities reported to have quality data according to MSDQI	National	27%	50%	60%	HMIS/ DHIS2
			Number of health facilities visited for MSDQI assessed for DQA						
			Denominator						
			Number of all facilities						
3.1.2	Strengthen capacity for malaria epidemics detection, investigation and containment at Council and health facility level in epidemic prone areas	Proportion of epidemic alerts investigated within two weeks of onset	Numerator	The indicator measures the sensitivity of surveillance system in detecting possible outbreaks and the capacity of the health system on outbreak investigation	National	NA	100%	100%	HMIS/ DHIS2
					Very Low	NA	NA	NA	
			Number of malaria outbreak alerts investigated within two weeks of onset		Low	NA	100%	100%	
			Denominator		Moderate	NA	NA	NA	
			All malaria outbreaks alerts		High	NA	NA	NA	
					Urban	NA	NA	NA	
3.1.3	Implementation of Case Based Surveillance to support	Proportion of malaria cases targeted for follow that	Numerator	The indicator shows the rate of implementation of	National	NA	80%	90%	
					Very Low	NA	80%	90%	

	elimination interventions in very low malaria transmission risk areas	have been investigated in Councils implementing CBS	Number of passively detected malaria cases investigated Denominator Number of targeted passively detected malaria cases	CBS in councils with very low malaria transmission risk.	Low Moderate High Urban	NA NA NA NA	NA NA NA NA	NA NA NA NA	NMCP Composite Database
3.2 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Strengthen malaria framework for collecting, processing and storing essential indictors from periodic service delivery initiatives and programmatic surveys in the communities		Proportion of available periodic service delivery and programmatic surveys report	Numerator Number of available periodic service delivery and programmatic survey reports Denominator Number of periodic service delivery and programmatic surveys according to SME plan	This indicator shows the number of surveys conducted within the reporting time against what has been planned according to SME plan.	National	100%	100%	100%	NMCP Composite Database
3.2	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
3.2.1	Coordinate and conduct representative population surveys according to SME plan	Number of TDHS-MIS and SMPS conducted	Numerator Number of TDHS-MIS and SMPS conducted according to SME plan Denominator 1	Conducting the planned number of TDHS-MIS and SMPS is essential in informing the progress towards malaria elimination	National	3	3	5	NMCP Annual Reports
3.2.2	Strengthen longitudinal vigilance of malaria parasitaemia in sentinel population: pregnant women at ANC	Proportion of pregnant women tested for malaria parasite during first ANC visits	Numerator Number of pregnant women tested for malaria parasite during first ANC visits Denominator Number of pregnant women attending first ANC visit	Information for this indicator is collected through routine system with huge number of data on monthly basis	National	97%	99%	100%	HMIS/ DHIS2
3.2.3	Conduct standard antimalarial Therapeutic Efficacy Study (TES) in sentinel sites as per WHO standard protocol	Number of anti-malarial therapeutic efficacy studies conducted annually	Numerator Number of anti-malarial therapeutic efficacy studies conducted annually Denominator NA	Continuous therapeutic efficacy monitoring regulate the selection of recommended antimalarials	National	6	24	36	NMCP Composite Database
3.2.4			Numerator		National		50%	75%	

	Strengthen longitudinal monitoring of mosquito population dynamics in the sentinel sites	Proportion of sentinel districts with monthly mosquito samples submitted to NIMR during the reporting period	Number of sentinel districts with submitted monthly mosquito samples during the reporting period Denominator Number of sentinel districts required to submit mosquito samples	Monitoring number of mosquito samples submitted monthly consecutively from the sentinel districts as elaborated in the Performance Framework is key towards generating EIR indicator					NMCP Composite Database
3.2.5	Strengthen longitudinal monitoring of efficacy and effectiveness of insecticides in national representative sentinel sites	Proportion of sentinel sites submitting all reports	Numerator Number of sentinel sites submitting all required reports Denominator Number of all sentinel sites	Continuous insecticide susceptibility monitoring regulate the selection of recommended chemicals for malaria prevention	National	100%	100%	100%	NMCP report
3.2.6	Coordinate the collection, analysis, interpretation and use of the programmatic monitoring of vector control initiatives (including LLINs, IRS and LSM) data	Number of bio-assay studies conducted annually	Numerator Number of bio-assay studies conducted per annum as stipulated in the PF Denominator NA	This is crucial indicator to monitor efficacy of insecticidal. This can also be used to monitor wash effect and regeneration time	National	6 IRS Districts	8	8	NMCP report
3.2.7	Establish capacity for malaria related molecular surveillance for programmatic monitoring of parasites and vector dynamics	Number of operational research using in-country processed molecular data	Numerator Number of operational research using in-country processed molecular data Denominator NA	Ability to generate molecular surveillance data in country	National	NA	4	6	Research Reports
3.3 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Strengthen a comprehensive malaria strategic information system to generate knowledge for evidence-based planning and decision making at all levels		Continuous availability of uninterrupted interactive web-based system providing non-routine malaria information	Numerator Functional, updated and uninterrupted web-based malaria repository database Denominator NA	Continuous availability of uninterrupted web-based repository database will be proxy to use information for programmatic monitoring	National	1	1	1	NMCP

3.3	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
3.3.1	Conduct a comprehensive periodic stratification of malaria transmission risk in all councils for improved targeting of interventions	Proportion of councils able to generate micro-stratification maps, interpret them and plan evidence based targeted malaria intervention	Numerator Number of councils able to generate and utilize micro-stratification maps Denominator Number of all councils	Districts able to target intervention according to micro-stratification of malaria risk	National	100%	100%	100%	Malaria Stratification Report
3.3.2	Strengthen malaria data management capacity and the national repository arrangements to enable evidence-based decision making at all levels	Availability of updated and functional web-based NMCP composite database and DHIS2 interactive dashboard able to accommodate malaria indicators for all malaria interventions	Numerator Functional web-based malaria database with DHIS2 interface Denominator	Existence of malaria database is key towards effective and efficiency use of malaria data from all possible sources for decision making.	National	1	1	1	NMCP report
3.3.3	Undertake periodic malaria program reviews and evaluation of the implementation of malaria strategic plan	MPR and MTR reports availability	Numerator Number of reports generated as per PF Denominator	Reports from MPR and MTR are crucial for developing malaria strategies	National	2	1	2	NMCP Reports
3.3.4	Create conducive environment for continuous collaboration with research, academia institutions and research capacities at subnational levels to facilitate evidence based decision making at all levels.	Proportion of operational research conducted as per SME plan	Numerator Number of operational research conducted Denominator Number of operational research planned	As proportion increases it indicates the degree of engagement and ownership of subnational levels in malaria control research	National	0%	25%	30%	NMCP Report

Commodities and Logistic Management

4. Strategic Objective	Impact Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Maintain timely availability of safe and quality malaria commodities and supplies at the delivery points	Proportion of commodities received as per supply plan	Numerator Quantity of commodity received in reporting period Denominator	This indicator is expected to monitor commodities availability. It is highly affected by the availability of funds for procurements	National	100%	100%	100%	Pipelines

			Quantity of commodities anticipated in the updated supply plan in the reporting period						
4.1 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Promote partnership to ensure malaria commodities are available in all service delivery points in the right amount and when needed		Proportion of facilities/points of care received deliveries within the specified time	Numerator Number of facilities/point of care received deliveries within specified time Denominator Number of facilities/points of care that placed order during specified time	This indicator is important to measure the compliance to the agreed supply plan in order to maintain adequate inventory levels and avoid extra costs related to emergency procurement and storage	National	NA	95%	100%	epicore9 eLMIS
4.1	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
4.1.1	Carry out annual quantification and gap analysis for all malaria commodities and supplies	Updated report with programmatic gap analysis, quantification for malaria commodities and supply plan	Numerator Updated report with programmatic gap analysis, quantification for malaria commodities and supply plan Denominator NA	Continuous availability of commodities depends on the information included into annual quantification report					
4.1.2	Provide conducive partnership to properly conduct procurement of malaria commodities and supplies	Proportion of commodities procurement orders initiated in the reporting period according to supply plan	Numerator Commodities procurement orders initiated in the reporting period according to supply plan Denominator Expected number of commodities procurement orders in the reporting period according to supply plan	This indicator monitors if the procurement is done based on the requested quantity, timelines and funding					
4.1.2.1	Procurement of antimalarial for treatment of uncomplicated malaria for public and private (CPM) health facilities (timely and effective is required)	Proportion of healthcare facilities reporting no stocks of ALu	Numerator Number of Health Facilities reporting no Alu in stock at the end of the month Denominator Number of Health Facilities eligible to provide Alu	Availability of Alu in HF is related to timely and efficient procurement. This indicator has been used in the past to monitor the efficiency of the procurement					

4.1.2.2	Procurement of antimalarial for preventive therapies	Proportion of healthcare facilities reporting no stocks of SP	Numerator Number of Health Facilities with no SP in stock at the end of the month Denominator Number of Health Facilities eligible to provide SP.	This indicator will monitor the procurement of antimalarials fior preventive therapies.					
4.1.2.3	Procurement of diagnostic test	Proportion of healthcare facilities reporting no stocks of mRDT	Numerator Number of Health Facilities with no mRDT stock at the end of the month Denominator Number of Health Facilities eligible to provide mRDT	This indicator will monitor the efficient of procurement of diagnostics.	National	2%	<1%	<1%	HMIS/ DHIS2
4.1.2.4	Procurement of antimalarial for treatment of severe malaria	Proportion of healthcare facilities reporting no stocks of Artesunate injection	Numerator Number of Health Facilities with available Artesunate injection Denominator Number of Health Facilities eligible to provide Artesunate injection	This indicator will monitor the efficiency of procurement procedures for injectable antimalarials	National	NA	<5%	<5%	HMIS/ DHIS2
4.1.2.5	Procurement of LLIN	Proportion of healthcare facilities reporting no stocks of LLIN	Numerator Number of Health Facilities with available LLIN/PBO net Denominator Number of Health Facilities eligible to provide LLIN/PBO net	This is appropriate indicator as it will monitor the efficient of procurement.	National	NA	<5%	<5%	HMIS /DHIS2
4.1.2.6	Procurement bio-larvicides	Proportion of bio larviciding received out of the anticipated in supply plan	Numerator Amount of bio larviciding received Denominator Amount of larviciding anticipated in supply plan	This indicator will be used to improve inventory availability, logistics management practices and to monitor the availability of bio larviciding at the points of care	National	NA	85%	85%	NMCP Composite Database
4.1.2.7	Procurement of insecticide for IRS	Proportion of insecticides received out of the anticipated in supply plan	Numerator Amount of insecticides received Denominator Amount of insecticides anticipated in supply plan	This indicator will be used to improve inventory availability, logistics management practices and to monitor the availability	National	100%	100%	100%	IRS contractor report

				of insecticides at the points of care					
4.1.3.1	Enhance supply chain of insecticide treated materials, insecticides and larvicides, from point of entry/supplier to service delivery point.	Proportion of insecticides and bio-larvicides received and delivered by delegated logistic authority (MSD, contractors) according to the pesticide management plan	Numerator Amount of insecticides and bio-larvicides delivered based on distributor information system Denominator Amount of insecticides and bio-larvicides received based on distributor information system	This indicator will be used as proxy to identify and follow up information gaps between supply chain levels and assure commodity accountability.	National	NA	100%	100%	Pesticide distribution information system
4.1.3.2	Enhance supply chain of medicines and diagnostics for malaria case management from point of entry/supplier to health care facilities	Fill rate of requested malaria commodities and supplies	Numerator Amount of commodities received Denominator Amount of commodities requested	This indicator measures the performance of the supplier in meeting the customer requirements.	National	TBD	100%	100%	eLMIS
4.1.4	Enhance logistic management of medicines, diagnostics and other malaria commodities within the health care facilities including dispensing	Proportion of facilities assessed on MSDQI logistic management scoring 75% and above	Numerator Number of facilities assessed on logistic management scoring above 75% Denominator Number of assessed facilities for logistic management	The quality of data to be used for logistic decision making is essential to maintain optimal availability of commodities	National	61%	75%	90%	HMIS/ DHIS2
4.2 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Promote partnership to ensure that all malaria commodities used at service delivery points are quality assured		Proportion of commodities batches tested at port of entry and post market surveillance with quality assurance certification	Numerator Number of commodities batches with quality assurance certification at port of entry and post market surveillance Denominator Number of commodities batches tested at port of entry and post market surveillance	Quality assurance depends on systematic testing of all batches received prior their distribution to point of care	National	100%	100%	100%	TMDA, TPRI, TBS
4.2	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
			Numerator						

4.2.1	To strengthen commodities Port of entry quality check for malaria commodities, vector control and case management	Proportion of malaria commodities batches passed the port of entry quality check	Number of malaria commodities batches passed the port of entry quality check Denominator Number of malaria commodities batches tested at port of entry	Quality assurance depends on systematic testing of all batches received at the port of entry prior their distribution to point of care	National	100%	100%	100%	TMDA,TBS,TPR I Reports
4.2.2	Post Market surveillance for antimalarial medicines and malaria testing devices	Proportion of medicine and testing devices that passed the quality check in post market surveillance reports	Numerator Medicine and devices that passed the quality check in post market surveillance reports Denominator Medicine and devices tested in post market surveillance reports	Quality assurance depends on systematic testing at the point of care	National	100%	100%	100%	TMDA PMS Quarterly reports
4.2.3	Post Market surveillance for vector control commodities, LLIN, insecticides and larvicides	LLIN durability and efficacy report	Numerator LLIN tested for durability and efficacy Denominator NA	According to quantification assumptions, LLIN are estimated to last and be efficacious for 3 years. Based on the results the assumptions might change	National	NA			NIMR Reports
4.3 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Promote partnership to ensure that all malaria commodities used at service delivery points are safe		Malaria commodities evaluated for safety and registered by delegated authorities	Numerator Malaria commodities evaluated for safety and registered by delegated authorities Denominator NA	This indicator is needed to monitor the safety of malaria commodities	National	XXX	TBD	TBD	TMDA Vigflow
4.3	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
4.3.1	Facilitate the relevant regulatory authorities, TMDA, to conduct passive pharmacovigilance for malaria medicine.	Reported passive adverse events or interactions of antimalarial medicine	Numerator ADR reported for antimalarials Denominator NA	This indicator can be easily accessed through the global electronic platform: VigiFlow information	National	49%	TBD	TBD	VigiFlow TMDA

4.3.2	Facilitate the relevant regulatory authorities, NIMR and TPRI, to conduct continuous evaluation use practices and re–evaluation of potentially adverse effects to people and the environment	Number of products for malaria vector control evaluated and re-evaluated for the safety profile	Numerator Number of product evaluated and re-evaluated for safety Denominator NA	The potential adverse effects of pesticides require a continuous process of re-evaluation. NMCP should access the TPRI safety reporting	National	NA	TBD	TBD	TPRI Reports

Social Behaviour Change & Advocacy

5. Strategic Objective	Impact Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target2025	Source
To strengthen an enabling environment where individuals at risk from malaria are empowered to protect themselves and their families from malaria and seek proper and timely malaria-treatment	Proportion of parents/caretakers with children under five years old with fever in the last two weeks for whom advice or treatment was sought	Numerator Number of parents/caretakers who sought advice or treatment for their children under five years of age with fever in the last two weeks Denominator Number of parents/caretakers of children under five years of age with fever in the last two weeks interviewed during the survey	The proposed indicator intends to measure the self-efficacy of parents/caretakers to perform/take an action of protecting their children	National	75%	81%	85%	MIS

5.1 Strategic Approach	Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Reinforce and update knowledge and practice amongst all community members about appropriate malaria prevention, testing and treatment, promote desired positive behaviors and social norms about healthy behaviours	Proportion of women with knowledge on measures to avoid malaria	Numerator Number of women with knowledge to avoid malaria Interviewed under the survey Denominator All women interviewed under the survey	In both of the output indicators women are just representative of assessing the level of malaria knowledge in the population as per MIS	National	87%	90%	93%	MIS

5.1	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline2020	Mid Target 2023	End Target2025	Source
5.1.1			Numerator		National	78%	80%	85%	HMIS/

	Improve capacity of healthcare workers to effectively provide accurate and relevant information to patients, pregnant women and caretakers of under-five on desired behaviors for malaria prevention and treatment	Proportion of health workers trained on providing SBC messages to clients	Number of health facilities with healthcare workers providing SBC information with a patient counseling score of above 75% Denominator Number of health Facilities assessed by MSDQI OPD Checklist	Measure health workers who provide of malaria messages to patients at OPD and ANC including friendly interaction and is measured through counselling section and observation in the MSDQI					DHIS2
5.1.2	Improve capacity of Community Health Workers (CHWs) to effectively provide accurate and relevant malaria information during their interaction with community members	Proportion of CHWs capacitated to implement Interpersonal Communication for Malaria interventions	Numerator Number of oriented CHWs to implement Interpersonal Communication for Malaria Denominator All targeted CHWs	The indicator is appropriate to measure CHWs with capacity to implementation interpersonal communication activities in the community	National	48%	60%	80%	NMCP Report
5.1.3	Develop and implement mass media campaign with key target audience at different levels using different communication channels to maintain knowledge level and spark actions	Proportion of women reached with appropriate malaria messages through mass media (TV, radio, printed materials & social media)	Numerator Number women Interviewed and reached through mass media with appropriate malaria messages Denominator All women interviewed under survey	Women surveyed are expected to represent the situation of media exposure in the population	National	78%	80%	85%	MIS
5.2 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Maintain high knowledge and improve good practices amongst vulnerable groups with elevated risk of malaria infection so that they know about their specific risk, prevention and treatment options available to them		Proportion of women 15-49 years who know pregnant women are at higher risk of getting malaria	Numerator Number of women aged 15-49 who know pregnant women are at higher risk of getting malaria interviewed under the survey Denominator	This indicator measures the knowledge level of target audience (vulnerable group), on understanding their vulnerability, using women at bearing age as representative	National	93%	94%	95%	MIS

			All women interviewed under the survey						
5.2	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
5.2.1	Develop and implement SBC outreach program for marginalized and disadvantaged vulnerable groups in all-malaria transmission areas	Number of SBC outreach events for targeted populations conducted in high-transmission areas	Numerator Number of SBC outreach events conducted Denominator NA	This indicator measure the SBC outreach program developed and implemented to targeted population as a representative of socioeconomic vulnerable groups, hard-to-reach, mobile populations and refugees in high-transmission areas	National	4938	8000	12000	NMCP Reports
5.2.2	Develop and implement school-based SBC programs to provide malaria messages	Proportion of schools whose teachers have been oriented on malaria SBC or pupils distributed with SBC materials	Numerator Number of School with teachers oriented on malaria SBC or pupils distributed with SBC materials Denominator All schools in the targeted districts/councils	This indicator looks at the extent of malaria school health program whether to teachers or pupils	National	0	2000	3000	NMCP Reports
5.2.3	Addressing potential gender-related barriers for uptake of malaria interventions at the household and community level	Number of malaria and gender assessment/studies conducted	Numerator Malaria-gender studies conducted Denominator NA	Specific studies will assess barriers to access and use of malaria interventions	National	0	1	2	NMCP Reports
5.3 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Encourage communities to utilize and implement community-based malaria control initiatives		% of women who state that malaria is the most serious health risk in the community	Numerator Number of women who state that malaria is the most serious health risk in the community Denominator	Informed community are able to plan and implement effective malaria control interventions	National	57%	60%	80%	MIS

			Total population surveyed						
5.3	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
5.3.1	Create an enabling environment to establish malaria community based intervention package that include promotion, LSM, CmCM and mCBS (including guideline, training package and M&E supervision systems)	Proportion of districts targeted for implementing promotional, vector control or malaria Community Case Management initiatives	Numerator: Council reached with malaria community engagement activities Denominator: All district	This indicator intends to measure councils preparedness to conduct malaria community engagement activities	National	47%	50%	60%	NMCP Report
5.4 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Strengthen Public Private Partnership to maximize SBC efforts and ensure consistence in fight against malaria		Proportion of private sector companies that invest in malaria (programmatic or financial) contribution to prevent and control malaria in the community	Numerator: Number of private companies contributing to malaria Denominator: All private organization engaged in the fight against malaria	This indicator intends to measure private companies commitment to fight malaria	National	23%	40%	50%	NMCP Report
5.4	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
5.4.1	Strengthen existing malaria SBC fora to ensure coordinated and harmonized implementation of the SBC strategy to all implementing partners at all levels including private sector	Number of SBC TWG and harmonization meeting conducted	Numerator: Number of SBC TWG and harmonization meeting Denominator: NA	This indicator measures the number of SBC TWG and harmonization meetings conducted as a way of coordination Implementing partners and private companies with activities and efforts to in the fight against malaria.	National	4	12	20	NMCP Reports

5.5 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Increase visibility for specific malaria campaigns to politicians, communities and general public so that malaria become an agenda and priority at all levels		Percentage of women age 15-49 who have seen or heard malaria campaign messages in the past year	Numerator Women who have seen or heard malaria campaign messages interviewed in the survey Denominator All women interviewed during the survey	This indicator measure the exposure of specific malaria campaign messages to different audience using women as representative	National	84%	86%	88%	MIS
5.5	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
5.5.1	Strengthening advocacy for malaria to high level leaders, influential people, regional and council leaders to raise the profile of malaria, get support and prioritization of malaria interventions at all levels	Number of advocacy meetings conducted at national, regional and council level	Numerator Number of advocacy meetings conducted at high level leaders, regional and councils Denominator Number of planned advocacy meetings conducted at high level leaders, regional and councils	This indicator expects to monitor awareness of political national, regional & councils leadership on malaria activities	National	2	50	100	NMCP Reports
5.5.2	Implement specific malaria campaigns to increase visibility	Number of campaign materials disseminated to the targeted audience	Numerator Number of campaign materials distributed Denominator NA	These indicator measures campaign visibility to different target audience	National	0	3000	6000	NMCP Reports
Leadership, Partnership and Resource Mobilization									
6. Strategic Objective		Impact Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
			Numerator		National	63%	75%	90%	MTR

To strengthen efficient and effective coordination for implementation of malaria strategies through accountable partnership		Proportion of malaria control service delivery mechanisms implemented annually	Number of service delivery mechanisms implemented in the year Denominator All service delivery mechanisms planned to be implemented in the year	This is an ideal way to track the performance on the implementation of planned activities. Although some implementations challenges might contribute to the low performance.					
6.1 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
To provide effective leadership and governance for the implementation of malaria control and elimination interventions at all levels		Program performance as rated over time, through periodic semiannual evaluation	Numerator Program performance rating Denominator NA	The indicator measures the progress of NMSP interventions from baseline to end-line	National	A	A+	A+	Evaluation Report of PUDR
6.1	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
6.1.1	Improve coordination and governance structures at all levels to strengthen coordination, communication, and close follow up of all malaria related interventions	Proportion of governance and technical meetings conducted as per plan	Numerator Number of governance and technical meetings conducted Denominator Number governance and technical meetings planned	Transparent governance and effective technical guidance is essential for implementing appropriate Malaria control intervention. Its coordination will be conducted by holding regular meetings of the established committees.	National	75%	90%	90%	NMCP Reports
6.1.2	Strengthen and sustain the country with appropriate evidence based malaria control strategy that will guide stakeholders and implementers towards the achievements of its goal	Proportion of updated strategic and technical documents available	Numerator Number of updated strategic and technical guidelines developed Denominator Number of strategic and technical guidelines planned	Policy documents are essential for malaria control interventions	National	100%	100%	100%	NMCP Reports

6.1.3	Strengthen human resources capacity for effective strategic plan implementation at national and LGA levels	Proportion of NMCP and PO-RALG staffing level filled by government as indicated in the organograms	Numerator Number of technical staff covered according to NMCP and PO-RALG organograms Denominator Number of technical staff required in the organogram	The government of Tanzania s responsible to ensure appropriate and competent staffing level as stipulated in the respective organograms	National	83%	100%	100%	NMCP Staff Plan
6.1.4	Enhance well structured, coordinated and harmonized supervision and verification system involving implementing entities at various levels	Proportion of regions supervised by national	Numerator Number of regions supervised Denominator All Regions	Supportive supervision is essential to provide quality services and to verify the implementation of interventions	National	100%	100%	100%	NMCP Supervision Reports
6.2 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
implement the malaria strategic plan		Proportion of domestic funds allocated for malaria interventions.	Numerator Domestic funds allocated for malaria interventions. Denominator Overall malaria interventions budget.	Domestic funding is required to fill the programmatic and financial gaps in the NMSP	National	NA	25%	50%	Malaria Business Plan
6.2	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
6.2.1	Strengthen the resource mobilization mechanisms for sustainable implementation of malaria strategies	Updated resource mobilization plan available	Numerator Resource mobilization plan available Denominator NA	The resource mobilization plan is needed to attract adequate resources, especially domestic, for comprehensive sustainable implementation of the NMSP	National	1 Draft	1	1	Govt, MOP, GF, others funding request

6.2.2	Sustain comprehensive business and operational plans for malaria control interventions	Updated business and annual operational plan for malaria control interventions available	Numerator Business and annual operational plan for malaria control interventions available Denominator NA	The implementation of the NMSP is implemented by using and updating the business plan and the annual operational plans	National	2	2	2	NMCP Reports
6.2.3	Strengthen NMCP capacity to successfully implement planned malaria intervention at all levels	Adequate technical and logistic equipment in place according to the procurement plan	Numerator Technical and logistic equipment available Denominator Adequate technical and logistic equipment listed in the procurement plan	To increase efficiency NMCP and PO-RALG teams need to work in a conducive environment and be supported with adequate technical and logistic equipment	National	75%	90%	90%	NMCP Reports
6.2.4	Strengthen the malaria component of annual comprehensive council health plans	Proportion of CCHP with funded malaria component in line with the NMSP	Numerator CCHP with funded malaria component in line with the NMSP Denominator All CCHP	Most of malaria interventions are implemented at HFs and community levels, thus councils need to include malaria budget in their plans	National	NA	50%	75%	NMCP Reports
6.3 Strategic Approach		Outcome Indicator	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
Promote harmonized multi-sectoral approach and cross-border initiative for malaria control		Proportion of regional/cross-border and multi-sectoral malaria initiatives implemented	Numerator Regional/cross-border and multi-sectoral malaria initiatives implemented Denominator	The indicator intends to monitor the status of multi sectoral and regional initiatives	National	1	1	1	NMCP Reports

			Regional/cross-border and multi-sectoral malaria initiatives planned						
6.3	Service Delivery Mechanism	Output Indicators	Indicator Description	Appropriateness of the Indicator	Malaria risk	Baseline 2020	Mid Target 2023	End Target 2025	Source
6.3.1	Customize GLMI / EAC & DRC strategic framework for cross border collaboration on malaria control	Regional cross border malaria control action plan available	Numerator NA Denominator NA	The indicator will measure state commitment	National	1	1	1	NMCP report
6.3.2	Develop action plans with relevant Ministries outlining multi-sectoral malaria control intervention and targets	National multi sectoral malaria control action plan available	Numerator National multi sectoral malaria control action plan available Denominator NA	The multi-sectoral action plan will guide the respective sector in implementing coordinated initiatives for malaria control	National	NA	1	1	NMCP Reports

Annex 5: Malaria Vulnerability

1. **Vulnerability due to biological conditions**

   Identified population groups: Infant (0-11 months); Childhood (1-4 years); Pregnant women, HIV; Chronic degenerative diseases under chemotherapy; Immunosuppressed patients; Sickle Cell Disease (SCD); Children admitted in the previous 6 months due to severe anaemia/severe malaria.

   Service delivery opportunities: preventive and curative services among routine health facilities and dedicated campaigns for preventive services. Preventive therapies should be explored further in these biological vulnerable population

2. **Vulnerability due to occupational exposure, livelihood & behavioral aspects**

   Identified population groups: Internal migrants, seasonal laborers (e.g. sugarcane, rice fields etc.); Nomads; Fisherman' Peasants exposed to increased malaria infection due to agriculture practices; People engaged in night-time social activities; People working at night (security guards, night shift workers); Large scale civil work employees (e.g. hydroelectric, large mine works, road and railway construction); Small scale miners (formal and informal); Children in school going age (10 -14); Elder adolescence (15-19 yrs) and young adulthood (20-30 yrs); Social norms inducing population to engagement in nighttime activities

   Service delivery opportunities: multi sectoral initiatives and appropriate malaria specific action plan should form the backbone of the service delivery in this category. Preventive therapies should be explored further in these situations

3. **Vulnerability due to socio economic conditions**

   Identified population groups: Destitute and extreme poor; Children working and living in streets; Elderly especially those marginalized; Physical and mental disabilities; Orphans/most vulnerable children; Orphanage and other boarding social welfare institutions; Prisoners/correctional facilities; Worst form of child labor; Beggars

   Service delivery opportunities: the social welfare services offer the ideal background for reaching out these population groups with malaria prevention and care. Some of the identified socio-economic vulnerable groups need to be properly mapped and their needs further identified.

4. **Vulnerability due to impaired access to preventive and curative services**

   Identified population groups: Hard to reach areas (distance); geographical barriers; Population living in areas with overstretched health care delivery services

   Service delivery opportunities: due to the lack of proper regulatory mechanisms that allow T&T beyond formal operational facilities, it is necessary to explore alternative initiatives to reach the marginalized and underserved population identified by NMCP mapping

5. **Vulnerability due to complex emergency situations**

   Identified population groups: Refugees; Emerging infectious disease outbreaks; Natural and manmade disasters

   Service delivery opportunities: the ideal framework for improving malaria curative and preventive services in emergency situation is outlined in the NMSP 2021-2025 and in the case management and vector control guidelines

Vulnerability due to biological conditions

Infancy, childhood, pregnancy, immunodeficiency, co-morbidity (e.g. SCD)

Infant (0-11 months)	4% of total population 2,303,365 *Source: census projection 2020*	OPD 573,062 uncomplicated malaria cases, incidence rate 249 per 1,000 (2019); Malaria & severe anaemia Admission 45,647 and admission rate 198 per 10,000 *Source dhis2* (2019)	NA	Immunologically immature, susceptible to severe condition	**What:** Issuing LLIN PTi in high risk areas Early T&T **Where**: RCH clinics and OPD **How**: routine health facility-based service delivery
Childhood (1-4 years)	16% of total population 9,213,450 *Source: census projection 2020)*	OPD: 2,259,263 uncomplicated malaria cases, incidence rate 245 per 1,000 (2019) *Source dhis2*, Malaria & severe anaemia Admission: 154,990 *Source: dhis2* (2019) and admission rate 168 per 10,000 MIS prevalence average 7.5% Range 0% (Arusha region) 24% (Kigoma region). *Source MIS,* (2017) 2,831,645 cases, 16.2% of all OPD cases (2019) *Source: dhis2*	Potential reservoir of gametocyte	Immunologically immature, exposed to high risk of severe anaemia, severe malaria and mortality especially in the second year of life. 46% of malaria deaths were contributed by under-five yrs children *(source dhis2)*	**What:** SMC in selected districts Early T&T **Where**: Community (SMC) IPD and OPD **How**: routine health facility-based service delivery and community-based campaigns
Pregnant women	4% of total population 2,303,365. *Source: census projection 2020*	Positivity rate at ANC 6.4% *(source dhis2, 2019)* LLIN performance 75$ *(source dhis2, 2019)*	NA	Temporarily decrease in immunity especially in gravida 1 and 2. Therefore, exposed to high risk of severe anaemia, severe malaria and mortality. Also increased risk of	**Situation/risk**: suboptimal performance in HFs **What** Issuing LLIN 1st ANC attendance IPTp Prevention of anaemia

	Total ANC women under ARV treatment: 5,526 *Source: dhis2* (2019)	IPT2/3 performance 70% *(source dhis2, 2019)*		miscarriages and LBW newborns.	**Where**: RCH clinic **How:** routine health facility-based service delivery:
HIV	% of HIV infection in 15+ years old population 4.9% (6.3% females, 3.4% males), 2017. 1.4 M PLHIV aged 15+ years. *Source: HIV Impact Survey 2016-2017* 1.24 per 1000 population estimated new HIV infection *Source: NACP* (2019). 1,282,226 attending CTC. *Source dhis2,* (2019).	Not available	NA	Acquired immunodeficiency. Therefore, exposed to high risk of severe anaemia, severe malaria and mortality.	**What**:: Prompt T&T LLIN distributed in CTC Pregnant women HIV receiving CPT **Where**: CTC & PMTCT **How**: routine health facility-based service delivery:
Chronic degenerative diseases under chemotherapy; Immunosuppressed patients	Not available	Not available			**What**: Personal protection Chemoprevention **Where**: oncological departments of referral special hospital **How**: within operational health facilities
Sickle Cell Disease (SCD)	Total SCD patients treated 200,000, *Source dhis2* (2019). Tanzania also has one of the highest numbers of SCD patients in the world, with approximately 6 out 1,000 newborns born with SCD annually. Therefore, the expected newborns with SCD 11,000 per year. Tanzania 5th country in the world (4th in Africa). Highest incidence in DSM and north west	The prevalence of parasitemia in OPD and IPD patients with SCD is 0.7% and 3.0% respectively. The prevalence of parasitemia is lower in patients with SCD than in patients without SCD both at clinic (0.7% vs 1.6%) and during hospitalization (3.0% vs 5.6%). Although	NA	The Hb S gene is known to be protective against malaria, but that advantage applies to AS heterozygotes only (a case of balanced polymorphism). The SS homozygotes are instead highly vulnerable to severe malaria with high consequent mortality. Although malaria is rare among patients with SCD, parasitemia during hospitalization is	**What**: LLIN Prompt T&T Chemoprophylaxis **Where**: Special SCD clinics **How**: routine health facility-based service delivery: N.B. In principle, all SCD patients ought to be on chemo-prophylaxis. In practice, should be selected those who appear to have the greatest

	Tanzania). *Source: NCD unit MoH,* 2019.	malaria is rare among patients with SCD, parasitemia during hospitalization was associated with both severe anemia and death		associated with both severe anemia and death	need for protection: i.e. those who, based on clinical judgment, have more severe disease; or who, based on social assessment, are likely to have less access to prompt anti-malarial treatment when they develop a fever (approximately 20% of SCD patients).
Children admitted in the previous 6 months due to severe anaemia/severe malaria	100,319 admissions due to severe anaemia and severe malaria every 6 months (2019). *Source dhis2*	By 18 months post discharge, in Malawi, 10.2% of children with severe anaemia were re-admitted with rebound severe anaemia and 12.6% had died, which is nine times higher than the mortality of children with mild anaemia. High rates of post-discharge morbidity and mortality have also been reported in western Kenya and Uganda, where 36.5% of children aged less than 5 years admitted with severe anaemia died after 18 months of follow up	NA	Severe anaemia is a leading cause of hospital admissions contributing substantially to paediatric mortality in Africa. Repeated malaria infection is the main associated factor leading to severe anaemia in children under the age of five years. Hospitalized children with severe anaemia are particularly at risk within the first 3 months post-discharge.	**What**: LLIN at discharge Post discharge malaria chemoprevention Hematinic **Where**: IPD **How**: routine health facility-based service delivery:

Vulnerability due to occupational exposure, livelihood & behavioral aspects

Internal migrants, seasonal laborers (sugarcane rice fields), nomads (livestock), fisherman, people engaged in night-time social activities, people working at night (security guards, *night shift* workers) large scale civil work employees (e.g. hydroelectric, road and railway construction), small scale miners; children in school going age

Internal migrants, seasonal laborers (e.g. sugarcane, rice fields etc.)	Not Available	Not Available	Potential reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia	Seasonal laborers moving from low to high transmission risk areas (e;g; from southern highlands to Kilombero valley) are at risk of being infected and develop severe malaria conditions	**What**: Routine T&T for symptomatic patients Regular intermittent MTAT; Provision of LLIN **Where**: in the work locations in high-moderate transmission areas **How**: outreach services
Nomads	1% of the total population engaged in livestock keepers (1 percent). *Source: Economic Survey Report 2014.*	Not Available	Not Applicable	Nomadic population moving from very low to high transmission risk areas (e;g; from northern highlands to rift valley seasonal grazing areas) are at risk of being infected and develop severe malaria conditions	**What:** TBD **Targeted malaria TAT** Zoo prophylaxis Identify Champions among Nomads Build awareness **Where**: identified areas, Include VEO to map specified living areas of nomadic people at particular time. **How**: LGA, Livestock department, one health, PO-RALG
Fisherman	7% of total population 4.7 Million. The *sector* employs 183,800 full time *fishermen* and about 4.0 million people earn their livelihoods from the *fisheries sector* related activities. *Source: Economic Survey Report, 2014*	Not Available	Potential reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia. In Tanzania, both great lakes shores and costal belt are at high risk of malaria transmission.	This population group is living in temporary seasonal settings (e.g. islands in Lake Victoria) with limited access to test and treatment services. Augmented exposure to mosquitoes' bites	**What:** Targeted malaria TAT Mosquitoes repellants To build awareness **Where**: in temporary fisherman camps. Mapping fishing camps at particular time **How**: dedicated outreach services, identify malaria champions among fishermen groups
Peasants exposed to increased	Not Available	Not Available	Movement high/low risk of transmission.	This population group is living in temporary seasonal settings (e.g. Area Mpunga cultivation with	**What** Targeted malaria TAT Mosquitoes repellants

malaria infection due to agriculture practices				limited access to test and treatment services. Augmented exposure to mosquitoes' bites	**Where**: in temporary Peasants camps. Mapping temporary seasonal area. **How**: dedicated outreach services, identify malaria champions among Peasant groups
People engaged in night-time social activities	4% of total population engaged in street vendors (4 percent). *Source: Basic demographic and Socio-Economic profile 2014*	Not Available	Potential parasite reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia	Augmented exposure to mosquitoes' bites with risk of repeated infections.	**What:** Targeted malaria TAT Mosquitoes repellants SBC intervention; Create awareness on malaria issues. **Where**: in respective sites **How**: dedicated outreach services
People working at night (security guards, night shift workers)	Not Available	Not Available	Potential parasite reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia.	Augmented exposure to mosquitoes' bites with risk of repeated infections.	**What:** Targeted malaria TAT Mosquitoes repellants **Where**: in respective work places **How**: dedicated outreach services
Large scale civil work employees (e.g. hydroelectric, large mine works, road and railway construction),	Not Available	Not Available	NA	This population group is living in temporary settings in the construction sites with potential exposure to mosquito bites due to manmade breeding sites related to construction works.	**What:** Targeted LLIN distribution Use of LSM in manmade breeding sites related to construction works Routine temporary T&T services Targeted malaria TAT Mosquitoes repellants Awareness creation **Where**: in respective work places **How**: dedicated outreach services, temporary health clinics provided by employers. Malaria safe company initiative. Multi sectoral action plan.
Small scale miners (formal and informal)	700,000 employed in formal and informal small-scale miners. *Source: National Bureau of Statistics, 2015, p. 66*	NA	NA	This population group is living in temporary shelters without screening for mosquitoes. They have also limited access to test and treatment services.	**What:** Targeted malaria TAT Mosquitoes repellants Use of LSM in manmade breeding sites related to mining excavations

				Augmented exposure to mosquitoes' bites	**Where**: in respective work places' mapping sites **How**: dedicated outreach services
Children in school going age (10 -14) including those with disabilities and special needs	6,743,218 of the population are age 10 -14 years. *Source: Natio0nal Accelerated Action and investment Agenda for Adolescent Health and Wellbeing 2020/21 – 2023/24, Basic Education Statistic – BEST* – (2019) School children with disabilities attending primary schools are 0.5% of the total	The overall malaria prevalence in schools was 14.1% (boys 15.4% and girls 12.8%). The prevalence increase with age: 11%; 14% and 16% in pupils aged <9. 10-11 and ≥12 years old respectively. In 57% of schools the prevalence was <5% while in the remaining 43% was >5%. In almost 10% of schools more than 50% prevalence was detected. Anaemia prevalence was 34% overall, with 34%, 32% and 57% in children 5-9; 10-14' and >14: years old, among infected children, 55% were anaemic.	Potential parasite reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia.	Malaria parasitaemia and anaemia are known to interfere with the normal growth and cognitive progress of children in school age.	**What:** Malaria SBC school interventions Intermitted treatment in high transmission areas LLIN distribution **Where**: in primary schools **How**: routine annual delivery of nets and IPTsc. Identify and carry out special initiatives for children with disabilities on prevention and care of malaria
Elder adolescence (15-19 yrs) and young adulthood (20-30 yrs)	5,696,459 of the population are age 15 – 19 years. *Source: National Accelerated Action and investment Agenda for Adolescent Health and Wellbeing 2020/21 – 2023/24*	The highest malaria burden in HF is recorded in this age group: in 3 NMCP surveyed regions 40% of OPD malaria diagnosis. Males are considerably more affected than female (60% vs 40%).	Potential parasite reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia.	Increase attendances to operational health facilities. Occupational and behavioral exposure to be investigated further.	**What:** Targeted LLIN distribution. Mosquito repellant Temporary T&T in identified sites Awareness on malaria prevention and care **Where**: identified sites **How**: outreach services
Social norms inducing population to engagement in nighttime activities	Social norms inducing population to engagement in nighttime is more evidenced in Kigoma, Mwanza and Coast Regions. An estimated 2.1 million people in those regions are engaged in these practices	Not available	Not appropriate	Increased exposure to infective bites	**What:** Awareness campaigns **Where**: aggregation sites within communities **How**: mid media initiatives

Vulnerability due to socio economic conditions

Destitute and Low wealth population, children working and living in streets, elderly, physical and mental disabilities, orphans/most vulnerable children; orphanage centres; prisoners/correctional facilities.

Destitute and extreme poor	Around 12 million Tanzanians live under poverty, while about 4.1 million people continue to be in extreme poverty. Approximately 70% of Tanzanians continue to live with less than $2 per day. Both poverty and inequality have continued increase as indicated by Gini coefficient of 0.36 in the year 2008/09, 0.37 in 2010/11 and 0.39 in 2012/13 as shown in the *National Panel Survey Wave 3, 2012-13 by NBS*. The Gini coefficient is the most commonly used single measure of inequality of a population based on income or wealth distribution. *Source: NBS* (2016)	The lowest wealth quintile is more affected by malaria infection (14%) compared to highest quintile (1%), Malaria service coverage as well is consistently smaller in these segments of population: LLIN access was 50% and 69% in lowest and highest wealth quintile respectively. Testing services are accessed by 32% in low wealth quintile compared to 60% in the highest quintile. IPT coverage was 49% and 63% in lowest and highest wealth quintile respectively. The proportion of women knowing ways to avoid malaria was 38% in lowest wealth quintile compared to 68% in the highest quintile. *Source MIS* (2017)	Potential parasite reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia.	Low access to services determines high prevalence and possibly incidence. Inadequate knowledge of malaria prevention measures and poor access to malaria services.	**What:** Targeted LLIN distribution Awareness creation **Where**: Identified communities **How**: TASAF social welfare services, housing improvement,
Children working and living in streets	A total number of 35,916 children living in street. *Source: NPA-VAWC 2017/18*	Not available	Potential parasite reservoir in malaria high risk settings with high asymptomatic parasitaemia and gametocytemia.	Increased exposure to mosquitoes' bites with risk of repeated infections	**What:** User friendly free of charge test and treatment services Outreach services **Where**: Identified places and aggregation areas **How**: Social welfare system; Non state actors
Elderly especially those marginalized	About 2,689,074 are older people aged 60 years and above which is 4.1% of the population. *Source:*	Not available			**What:** User friendly and free of charge test and treatment services Outreach services

	NBS: National population projection (2018)				**Where**: Identified places and aggregation areas **How**: Social welfare system; Non state actors
Physical and mental disabilities	According to the, over 9% of the population has disability. Source: 2012 population Census. The predominant types of disability are difficulties with seeing (32% of disabilities) walking (20%) and hearing (16%)	Not Available	Not applicable	Disabilities might affect social welfare and wealth, making this segment of population vulnerable to malaria infection due to sub optimal access to health care and preventive services.	**What:** User friendly and free of charge test and treatment services Outreach services Targeted LLIN distribution **Where**: Identified places and aggregation areas **How**: Social welfare system; Non state actors; dedicated institutions
Most vulnerable children (including orphans)	12% of the children population are Most Vulnerable. *Source. NPA-VAWC- National Plan of Action to End Violence Against Women and Children – 2017/18 – 2021/22; National Survey on Violence against Children in Tanzania 2011*	Not Available	Not applicable	This population group is vulnerable to malaria infection due to sub optimal access to health care and preventive services.	**What:** User friendly and free of charge test and treatment services Outreach services Targeted LLIN distribution **Where**: Identified places and dedicated institutions **How**: Social welfare system; Non state actors;
Orphanage and other boarding social welfare institutions	828 Orphans and Children homes registered with 403,982 orphans and vulnerable children. *Source: NPA-VAWC 2017/18 – 2021/22*	Not Available	Not applicable		**What:** User friendly and free of charge test and treatment services Outreach services Targeted LLIN distribution **Where**: dedicated institutions **How**: Social welfare system; Non state actors;
Prisoners/ correctional facilities	In the country there are 126 correctional facilities,	Not Available	Not applicable	High exposure to malaria vector bites	**What:** Routine test and treatment services Relevant and applicable vector control initiatives **Where**: dedicated prisons' health services

					How: Within routine health and inmate services
Worst form of child labor	4.2 million out of 14.7 million children were engaged in child labour of which 3.2 million were engaged in hazardous work. Among the 4.2 million children in child labour, 84%,15%, and 1% are found in rural, other urban and Dar Es Salaam respectively. The main economic sectors the child labour prevails are agriculture (92%), households (3%) and trade and services (3%). *Source: NBS, (2016)*	Not Available	Not applicable	This population group is vulnerable to malaria infection due to sub optimal access to health care and preventive services.	**What:** User friendly and free of charge test and treatment services Outreach services Targeted LLIN distribution **Where**: Identified places and dedicated institutions **How**: Social welfare system; Non state actors;
Beggars	32,863 are beggars living on street without proper home *Source: Social Welfare Annual Report (2018)* where Dar Es Salaam, Mwanza and Arusha combined constitute 45% of the total number	Not Available	Not applicable	This population group is vulnerable to malaria infection due to sub optimal access to health care and preventive services.	**What:** User friendly and free of charge test and treatment services Outreach services Targeted LLIN distribution **Where**: Identified places and dedicated institutions **How**: Social welfare system; Non state actors;

Vulnerability due to impaired access to preventive and curative services

Hard to reach areas, geographical barriers,

Hard to reach areas (distance)	In five malaria high risk regions (Ruvuma, Katavi, Geita, Kagera, Kigoma) 292 (12%) villages with a population of over 920,000 are located 10 Km or more from nearby health facility. *Source: NMCP survey 2019* See also TRP response issue # 2	In 2019 the incidence rate in the selected five regions was 219 per 1000 population compared to 99 per 1,000 in the remaining 21 regions. Source: dhis2	Large parasite reservoir contributes to maintain high transmission in these areas	Low accessibility of routine malaria services due to long walking time or distance to health facility	**What:** Routine test and treatment of febrile conditions **Where**: operational health facilities and communities **How**: Explore feasible way to reach these marginalized areas by using existing operational health services
Geographical barriers	Not available	Not available	Large parasite reservoir contributes to maintain high transmission in these areas	Low accessibility of routine malaria services due to long walking time to health facility	**What:** Routine test and treatment of febrile conditions **Where**: operational health facilities and communities **How:** Explore feasible way to reach these marginalized areas by using existing operational health services
Population living in areas with overstretched health care delivery services	In five malaria high risk regions (Ruvuma, Katavi, Geita, Kagera, Kigoma) 195 (20%) health facilities serving over 3.8 million population have a catchment area with over 15,000 population (the current MoH recommendation is less than 10,000 population per HF. *Source: NMCP survey* (2019); See also TRP response issue # 2	Not available	Large parasite reservoir contributes to maintain high transmission in these areas	Low accessibility of routine malaria services due to long waiting time, low quality of services due to overburdened health facility.	**What:** Routine test and treatment of febrile conditions **Where**: operational health facilities and communities **How**: Explore feasible ways to improve service delivery in the existing overstretched operational health services

Vulnerability due to complex emergency situations

Refugees, other emergencies (flooding, earthquake, infectious disease outbreaks)

Refugees	In 2019, about 242,000 refugees are hosted in three camps in Kigoma region. Source: UNHCR	237,865 malaria cases reported in 3 refugees camos (Nduta, Mtendeli and Nyarugusu) The annual parasite index in the same year was: 983 per 1000 (the highest incidence in Tanzania), Source dhis2 (2019). Overall prevalence in children 5-16 years: 23%, Source*: NMCP SMPS* (2019)	The high transmission and high prevalence not only are expected to affect the health of the refugees themselves but also the population living in the surrounding areas	High incidence and prevalence	**What:** Preventive services: IRS, LLIN distribution, LSM, provision of preventive therapies for identified vulnerable groups Curative services: Test and treatment **Where**: in the respective dwellings in camps and operational health facilities **How**: routine provision of services through UNHCR regulations, non-state actors
Emerging infectious disease outbreaks	Not applicable	Not available	In case of pandemics (e.g. Covid-19) and epidemics of emerging infectious disease (e.g. Ebola), health care delivery system might be disrupted. Malaria preventive and curative services are likely to be affected.	Increased number of cases due to low access to preventive and curative services	**What**: MDA Targeted delivery of LLIN T&T in emergency point of care **Where**: within affected communities **How**: emergency service delivery
Natural and manmade disasters	Not applicable	Not available	In case of natural disasters (e.g. floods, heart quakes), health care delivery system might be disrupted. Malaria preventive and curative services are likely to be affected.	Increased number of cases due to low access to preventive and curative services	**What::** MDA Targeted delivery of LLIN T&T in emergency point of care **Where**: within affected communities **How**: emergency service delivery

Annex 6: Stratification Packages and Simulation of Impact of Malaria Interventions in Tanzania

Targeted malaria service delivery according to operational and epidemiological strata

The strategic plan 2021-2025 recommends a number of strategic approaches and service delivery mechanisms that suit the differential strategic goals and targets according to **operational and epidemiological** situation. Burden reduction and elimination strategies coexist and their aim is to assemble a harmonized continuum, of interventions that aim to speed up the roadmap towards malaria elimination by the end of the current decade. Figure 34 and Table 48 illustrate the combination of the proposed intervention packages at council level.

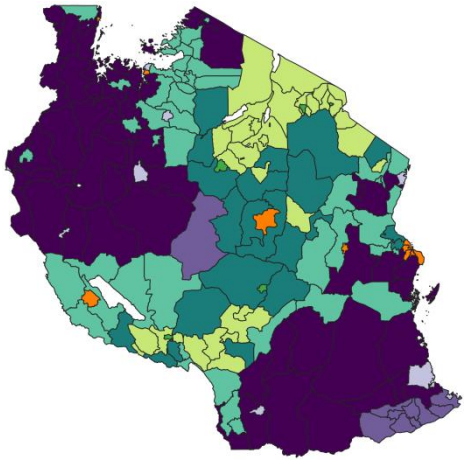
Table 48: Strategic intervention package according to malaria risk strata and operational settimgs

Malaria risk	Council status	Service delivery mechanisms	Remarks
Very low	DC, TC	**IMVC**: LLIN for Vulnerable group, focal LSM, focal IRS **MDT&PT**: ACT, mRDT, Primaquine **SME**: CBS	IPTp to be withdrawn once CBS is established and functional LLIN distribution targeting vulnerable and special groups/situation
	MC, CC	**IMVC**: LLIN for Vulnerable group, blanket LSM **MDT&PT**: ACT, mRDT, Primaquine **SME**: CBS	
Low	DC, TC	**IMVC**: LLIN universal, seasonal broad LSM **MDT&PT**: ACT, mRDT, IPTp **SME**: MEEDS	Unstable and mainly seasonal transmission suggests broad use of LSM and establishment of malaria outbreak prevention and control
	MC, CC	**IMVC**: LLIN universal, blanket LSM **MDT&PT**: ACT, mRDT, IPTp **SME**: MEEDS	
Moderate	DC, TC	**IMVC**: LLIN universal, targeted LSM **MDT&PT**: ACT, mRDT, IPTp	Standard approach, service optimal coverage to have high priority
	MC, CC	**IMVC**: LLIN universal, blanket LSM **MDT&PT**: ACT, mRDT, IPTp	
High	DC, TC	**IMVC**: LLIN universal, targeted IRS, targeted LSM **MDT&PT**: ACT, mRDT, IPTp, IPTi in eligible council, , CmCM in targeted areas, SMC	Increased preventive and curative package to target burden reduction. IMVC to be accurately target nit only the risk but the potential impact
	MC, CC	**IMVC**: LLIN universal, blanket LSM **MDT&PT**: ACT, mRDT, IPTp	

DC: District Council; TC: Town Council; MC Municipal Council; CC: City Council.
LLIN: long lasting insecticide treated net, IRS Indoor Residual Spray; SNP: school net program; RCH: reproductive and child health; ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy, CBS: case based surveillance; CmCM: malaria community case management; SMC: Seasonal Malaria Chemoprevention; IPTi: Intermittent Preventive Treatment in infancy; IPTsc: Intermittent Preventive Treatment in school; LSM: larval source management; (T): targeted; (B): blanket; (U): universal; (F): focal; (E): eligible; (S): seasonal; (V): vulnerable; MEEDS: malaria epidemic early detection system,

Figure 34: Strategic intervention package according to epidemiological and operational strata

Strategic plan period: 2021-2025



Legend

LLIN: long lasting insecticide treated net, IRS Indoor Residual Spray; SNP: school net program; RCH: reproductive and child health; ACT: Artemisinin-based combination therapy, IPTp: Intermittent Preventive Treatment in pregnancy, CBS: case based surveillance; CmCM: malaria community case management; SMC: Seasonal Malaria Chemoprevention; IPTi: Intermittent Preventive Treatment in infancy; IPTsc: Intermittent Preventive Treatment in school; LSM: larval source management; (T): targeted; (B): blanket; (U): universal; (F): focal; (E): eligible; (S): seasonal; (V): vulnerable; MEEDS: malaria epidemic early detection system, PQ: Primaquine

2021-2023 NSP

- LLIN(U) ACT IPTp mRDT IRS(T) LSM(T) mCCM(T) IPTi(E) IPTsc(T)
- LLIN(U) ACT IPTp mRDT IRS(T) LSM(T) mCCM(T) IPTi(E) IPTsc(T) SMC
- LLIN(U) ACT IPTp mRDT LSM(B)
- LLIN(U) ACT IPTp mRDT LSM(B) MEEDS
- LLIN(U) ACT IPTp mRDT LSM(S) MEEDS
- LLIN(U) ACT IPTp mRDT LSM(T)
- LLIN(V) ACT mRDT LSM(B) CBS PQ
- LLIN(V) ACT mRDT LSM(F) IRS(F) CBS PQ

The strategic plan 2021-2025 also recommends specific strategies and service delivery mechanisms according to **population malaria vulnerability**. NMCP identified five categories of vulnerability (see Table 49) due to biological, occupational. Socioeconomic, impaired access to health services and emergency situations. Among the category of vulnerability, a number of population groups have been recognized and for each one a set of recommended interventions were listed. See Appendix 8 for more details.

Table 49: Malaria recommended strategic objective and service delivery mechanism for special population groups

Malaria Vulnerability	*Special population Group*	*Strategy*	*Service delivery mechanisms*
Occupational exposure, livelihood & behavioral aspects	Internal migrants, seasonal laborers; nomads; forestry workforce, fisherman, specific risky agriculture practices;	IMVC	Personal protection measures
		MDT&PT	TAT Outreach Services (proACD)
		SME	TAT Tracking
	People engaged in night-time social activities; working at night; night time social norm practices	IMVC	Personal protection measures
		MDT&PT	Outreach TAT services (proACD)
		SME	TAT Tracking
	Employees of large scale civil work, mine works, construction projects	IMVC	LLIN TRC (through PPP, malaria safe company)
			LSM Bio-L Focal
			LSM Environmental Management
		MDT&PT	TAT in dedicated health care facilities (PCD)

Malaria Vulnerability	*Special population Group*	*Strategy*	*Service delivery mechanisms*
			TAT Outreach Services (proACD)
		SME	TAT Tracking
	People engaged in major trading events, hub markey places, shifting markets, livestocl auction marts	IMVC	Personal protection measures
		MDT&PT	TAT in dedicated point of care (PCD)
		SME	TAT Tracking
	Children in school going age; Elder adolescence and young adulthood;	IMVC	LLIN Special Vulnerable groups
		MDT&PT	tMDA
			IPTsc
			TAT Outreach Services (proACD)
		SME	TAT Tracking
Socio economic conditions	Destitute and extreme poor; Beggars	IMVC	LLIN Special Vulnerable groups
		MDT&PT	TAT Outreach Services (proACD)
		SME	TAT Tracking
	Children working and living in streets; Worst form of child labor	IMVC	LLIN Special Vulnerable groups
		MDT&PT	TAT Outreach Services (proACD)
		SME	TAT Tracking
	Elderly especially those marginalized;	IMVC	LLIN Special Vulnerable groups
		MDT&PT	TAT Outreach Services (proACD)
		SME	TAT Tracking
	Physical and mental disabilities;	IMVC	LLIN Special Vulnerable groups
		MDT&PT	TAT Outreach Services (proACD)
		SME	TAT Tracking
	Orphans/most vulnerable children; Orphanage and other social welfare institutions;	IMVC	LLIN Special Vulnerable groups
		MDT&PT	TAT Outreach Services (proACD)
		SME	TAT Tracking
	Prisoners/correctional facilities;	IMVC	LLIN Special Vulnerable groups
		MDT&PT	TAT in dedicated health care facilities (PCD)
		SME	TAT Tracking
Impaired access to malaria services	People living in hard to reach areas (long distance, walking time or geographical barriers);	IMVC	LLIN TRC (universal coversge)
		MDT&PT	CmCM
		SME	TAT Tracking
	Population living in areas with overstretched health care delivery services	IMVC	LLIN TRC (universal coversge)
		MDT&PT	CmCM
		SME	TAT Tracking

Malaria Vulnerability	*Special population Group*	*Strategy*	*Service delivery mechanisms*
Complex emergency situations	Refugees	IMVC	Personal protection measures
			IRS targeted
			LSM targeted
		MDT&PT	TAT in dedicated health care facilities (PCD)
			IPTp
			Targeted MDA
		SME	TAT Tracking
	People living in an area with incumbent malaria outbreaks	IMVC	IRS preemptive
		MDT&PT	TAT in dedicated point of care (PCD)
			TAT Outreach Services (proACD)
			Targeted MDA
		SME	TAT Tracking
	People affected by emerging infectious disease outbreaks;	IMVC	LLIN TRC
			Personal protection measures
		MDT&PT	Targeted MDA
			TAT Outreach Services (proACD)
		SME	TAT Tracking
	People affected ny natural and manmade disasters	IMVC	Personal protection measures
		MDT&PT	Targeted MDA
			TAT in dedicated point of care (PCD)
			TAT Outreach Services (proACD)
		SME	TAT Tracking
TAT: test and treatment; tMDA: targeted mass drug administration; ACD: active case detection; PCD: passive case detection; LSM: larval source management; TRC: targeted replacement campaign; IPT: intermittent preventive treatment			

The use of modelling to inform strategic decisions

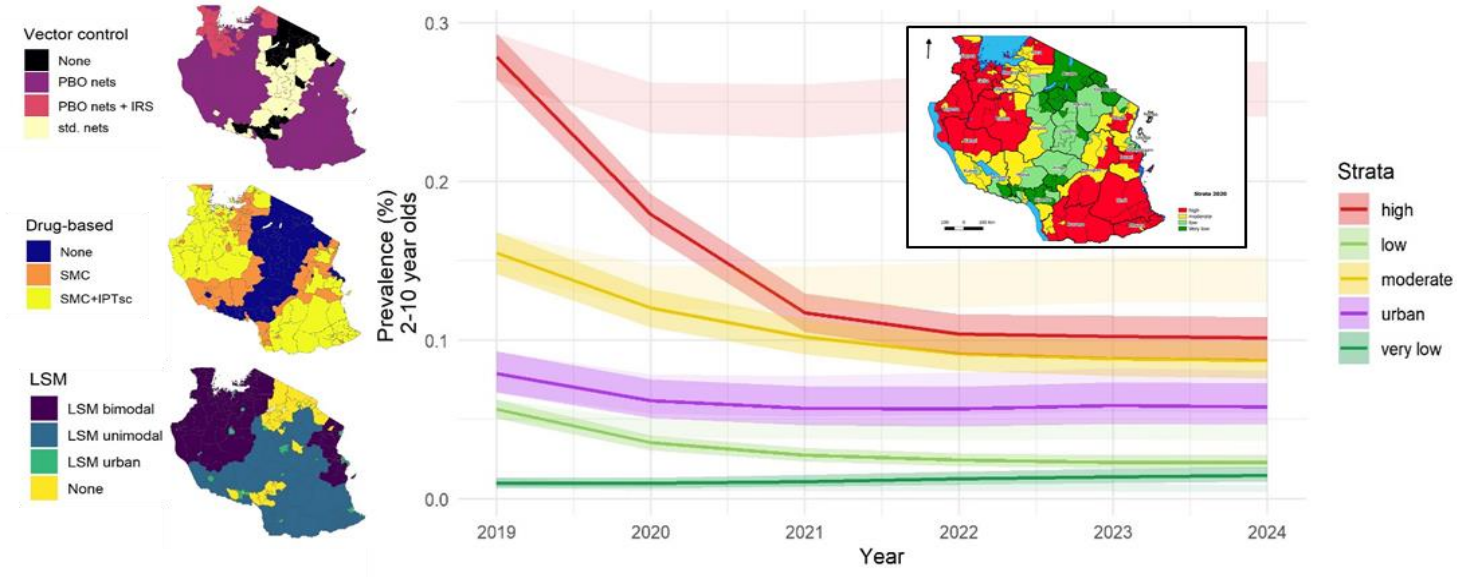
Epidemiological, clinical and operational studies or routine health information systems alone may not be sufficient or flexible enough to provide guidance for strategic planning and optimal allocation of resources. This is especially true when there is a need for predictions from various hypothetical scenarios and estimates of geographically- specific, long-term effects. In the update of the National Malaria Strategic Plan (NMSP), modeling has been used to inform the NMCP on the expected impact of the suggested NMSP as well as alternative strategies. By comparing different strategic scenarios, modelling results generate information to understand optimal deployment of interventions to maximize impact of new approaches (interventions and strategies). Indeed, the comparison of the impact of these different scenarios gives an understanding on how to best allocate the interventions, understand the gap in tools and prioritize the different councils for each intervention.

More specifically, modeling assisted the NMCP a) to predict the impact of the updated NMSP and b) by comparing the impact of alternative strategic plans suggested by the model to ensure various objectives are met and c) to suggest areas where core interventions would not be sufficient to achieve elimination as well as d) suggesting a prioritization list of council where additional interventions should be implemented.

Impact of the NMSP according to updated strata

If fully implemented, the NMSP is expected to have a large decrease in prevalence in each stratum (see Figure 35). The higher the prevalence in the strata the more impact the strategy would have, driving transmission down by 60% to 80% at best. Note that the LLIN is assumed to be distributed through a continuous channel such as schools and to achieve 60% usage. The drug-based interventions, i.e. SMC and IPT in school children are assumed to achieve coverage of 85% (Figure 24). In very low strata, the absence of nets does not suggest a rebound of transmission, despite a relatively small increase in prevalence. In the absolute, the transmission remains low. The addition of larval source management might be costly but could lead to incremental benefit if it can be operationally feasible to effectively reduce the emergence of new mosquitoes (the model suggested a reduction of emerging mosquitoes of 60%). The interventions in the high strata would lead to great reduction of prevalence but also to very large cost, representing around 60% of the total national malaria costs and in particular for IRS and IPTsc accounting for 50% of these.

Figure 35: Impact of NMSP according to interventions and strata



Optimal strategy for allocation of interventions

The analyses have selected three additional strategic plan that would lead to three distinct objectives, i.e. that i) the NMSP target of a national 40% reduction in incidence 40% is achieved or ii) a cost effective strategy ensuring the most impact for each dollar spent (assuming a willingness to pay equivalent to the GDP for each case averted) is selected or iii) a cost-effective plan for the NMSP for a given a constraint budget is implemented.

The results show that depending on the objective, the plan of interventions can largely differ, although consistently targeting high prevalence areas in priority. The results suggested that a national target could be achieved by only concentrating to some areas but leaving other with fewer resources. However, such plans might not be equitable. It also seemed that a national reduction of incidence of 40% between 2019 and 2023 seems a relatively easy target to reach, the current NMSP is fully implemented is predicted to reduce incidence by almost 55%. Targets might need to be reviewed and/or set at sub national levels**.**

Although IRS is not a cheap intervention, it might be cost-effective if Tanzania is willing to pay the cost of 1'100 USD per case averted and therefore leading to a total budget largely exceeding the available current funds.

If only 80% of the budget is available for implementing the NMSP, the modelling results show that it would be more cost-effective to reduce the IRS activities in the lake zone and distribute the nets in some councils of the low strata. Additionally, the prioritization of the council that receive PBO nets might need to be revisited. Indeed, for a similar amount of funding, optimizing the targeting can lead to greater reduction of transmission.

Expected elimination target with available core interventions

The analyses also considered a theoretical scenario with all core interventions, i.e. LLINs, IRS and case management implemented everywhere at very high coverage and usage. The objective was to understand whether these interventions would be sufficient to lead to elimination in each council by 2030. The results show that in high strata, these core interventions, even if implemented at high coverage would not be sufficient to lead to a prevalence less than 1%. As a result, in addition to optimizing the intervention strategies and ensuring high coverage and usage of interventions, Tanzania need to consider additional interventions in some councils that would lead to elimination, additionally to core interventions.

Council prioritization for deployment of additional interventions

In the context of constrained resources, it becomes essential to prioritize the councils where interventions additional to nets need to be deployed. Traditionally, these ranking are established based on indicators of burden or risk (e.g. incidence, prevalence, TPR) and therefore providing similar ranking for every intervention. Modelling was used to determine a prioritization list for interventions including IRS, IPT schoolchildren, SMC and potentially MDA based on the impact of each of these interventions. The prioritization of the councils largely differ between the interventions. The model suggested that if IRS were to be implemented it should be prioritized around the Lake zone, which is what the NMSP is currently suggesting.

Conclusions

Modelling results are showing some reassuring messages about the expected impact of the suggested NMSP. Although, it additionally suggests small revisions of the plan for optimized impact and resources. The results show how core interventions would not be sufficient to achieve the elimination target. These evidence could motivate the need for further research on understanding what tool to implement as funding or poor adherence to current interventions, although very important to address, might not be the only obstacles to elimination. For the implementation of the interventions, modelling can also serve as a tool to optimize targeting of councils to ensure maximum impact.

Annex 7: Budget Summary by Objectives

SO: strategic Objective; MVC: Malaria Vector Control; CLM: Commodities and Logistic Management; MCM: Malaria Case Management; SME: Surveillance, Monitoring & Evaluation; SBC: Social Behavioural Change & Advocacy; LP&R: Leadership, Partnership and Resource Mobilization;

Needs by year

		Needs				
SO #	SO	2021	2022	2023	2024	2025
1	Implementation	23,296,514	28,232,222	32,097,142	34,211,680	33,042,399
IMVC	Procurement	59,785,440	73,762,875	85,816,238	95,556,991	96,493,580
1 Total		**83,081,954**	**101,995,098**	**117,913,379**	**129,768,671**	**129,535,979**
2	Implementation	10,792,857	12,784,834	12,551,869	12,350,100	12,318,231
MDT&PT	Procurement	32,854,234	32,179,533	37,087,266	34,362,031	37,829,406
2 Total		**43,647,090**	**44,964,367**	**49,639,135**	**46,712,132**	**50,147,636**
3 SME	Implementation	12,489,899	10,927,899	13,434,899	9,208,400	11,470,000
3 Total		**12,489,899**	**10,927,899**	**13,434,899**	**9,208,400**	**11,470,000**
4 Logistics	Implementation	1,638,881	1,476,341	1,516,341	1,352,500	1,352,500
4 Total		**1,638,881**	**1,476,341**	**1,516,341**	**1,352,500**	**1,352,500**
5 SBC&A	Implementation	6,119,810	6,247,167	5,583,434	5,611,528	4,955,182
5 Total		**6,119,810**	**6,247,167**	**5,583,434**	**5,611,528**	**4,955,182**
6 LP&R	Implementation	13,046,312	12,799,253	13,383,988	10,345,974	12,919,140
6 Total		**13,046,312**	**12,799,253**	**13,383,988**	**10,345,974**	**12,919,140**
Grand Total		**160,023,947**	**178,410,125**	**201,471,176**	**202,999,205**	**210,380,437**

Needs, anticipated funds and Gaps by implementing period

		Needs		Anticipated		Gap	
SO #	SO	2021-2023	2021-2025	2021-2023	2021-2025	2021-2023	2021-2025
1	Implementation	83,625,878	150,879,957	41,527,695	67,487,617	42,098,184	83,392,340
IMVC	Procurement	219,364,553	411,415,124	128,680,819	161,258,931	90,683,734	250,156,193
1 Total		**302,990,432**	**562,295,081**	**170,208,514**	**228,746,548**	**132,781,918**	**333,548,533**
2	Implementation	36,129,560	60,797,891	16,408,067	23,508,067	19,721,492	37,289,823
MDT&PT	Procurement	102,121,033	174,312,470	76,287,788	91,049,973	25,833,245	83,262,496
2 Total		**138,250,592**	**235,110,360**	**92,695,855**	**114,558,041**	**45,554,737**	**120,552,319**
3 SME	Implementation	36,852,698	57,531,098	19,049,296	26,649,296	17,803,402	30,881,802
3 Total		**36,852,698**	**57,531,098**	**19,049,296**	**26,649,296**	**17,803,402**	**30,881,802**
4 Logistics	Implementation	4,631,562	7,336,562	2,975,212	4,475,212	1,656,350	2,861,350
4 Total		**4,631,562**	**7,336,562**	**2,975,212**	**4,475,212**	**1,656,350**	**2,861,350**
5 SBC&A	Implementation	17,950,411	28,517,121	5,954,875	8,416,875	11,995,536	20,100,245
5 Total		**17,950,411**	**28,517,121**	**5,954,875**	**8,416,875**	**11,995,536**	**20,100,245**
6 LP&R	Implementation	39,229,553	62,494,667	19,858,049	29,783,049	19,371,504	32,711,618
6 Total		**39,229,553**	**62,494,667**	**19,858,049**	**29,783,049**	**19,371,504**	**32,711,618**
Grand Total		**539,905,248**	**953,284,890**	**310,741,802**	**412,629,021**	**229,163,447**	**540,655,868**

Annex 8: Budget summary by strategic approach (from Business plan 2021-2025)

SO: Strategic Objective; SA: Strategic Approach; IMVC: Integrated Malaria Vector Control; CLM: Commodities and Logistic Management; PSM: Procurement and Supply Management; MCM: Malaria Case Management; SME: Surveillance, Monitoring & Evaluation; SBCA: Social Behavior Change & Advocacy; LP&R: Leadership, Partnership and Resource mobilization; LLIN: Long Lasting Insecticide Treated Nets; IRS: Indoor Residual Spray; LSM: Larval Source Management;

			Needs		Anticipated		Gap	
SO #	**SA**		**2021-2023**	**2021-2025**	**2021-2023**	**2021-2025**	**2021-2023**	**2021-2025**
1 IMVC	LLIN	Implementation	26,167,843	43,232,663	25,474,406	40,634,328	693,437	2,598,335
		Procurement	133,423,049	231,277,016	113,102,139	135,398,731	20,320,910	95,878,284
	IRS	Implementation	30,177,674	48,121,526	13,350,000	22,250,000	16,827,674	25,871,526
		Procurement	56,576,506	111,619,781	9,000,000	15,000,000	47,576,506	96,619,781
	LSM	Implementation	26,552,804	58,698,210	2,500,000	4,400,000	24,052,804	54,298,210
		Procurement	29,364,998	68,518,328	6,578,680	10,860,200	22,786,318	57,658,128
	IRM&M	Implementation	727,558	827,558	203,289	203,289	524,269	624,269
Total			**302,990,432**	**562,295,081**	**170,208,514**	**228,746,548**	**132,781,918**	**333,548,533**
2 MDT & PT	Diagnosis	Implementation	3,453,166	5,858,073	332,152	332,152	3,121,014	5,525,921
		Procurement	44,565,975	74,213,342	39,380,468	42,518,710	5,185,507	31,694,631
	Treatment	Implementation	15,533,200	24,438,681	12,925,417	19,125,417	2,607,783	5,313,264
		Procurement	37,035,929	62,871,651	27,910,982	33,450,982	9,124,947	29,420,669
	Preventive Therapies	Implementation	12,730,890	23,083,528	1,739,493	2,639,493	10,991,397	20,444,035
		Procurement	18,100,990	33,640,412	8,974,341	15,058,283	9,126,649	18,582,129
	Special Groups	Implementation	4,412,304	7,417,609	1,411,006	1,411,006	3,001,298	6,006,603
		Procurement	2,418,139	3,587,065	21,998	21,998	2,396,141	3,565,067
Total			**138,250,592**	**235,110,360**	**92,695,855**	**114,558,041**	**45,554,737**	**120,552,319**
3 SME	Surveillance		17,440,000	27,530,000	6,695,498	9,695,498	10,744,502	17,834,502
	Periodic surveys		13,513,698	21,088,698	9,320,011	12,420,011	4,193,687	8,668,687
	Strategic Information		5,899,000	8,912,400	3,033,787	4,533,787	2,865,213	4,378,613

Total		**36,852,698**	**57,531,098**	**19,049,296**	**26,649,296**	**17,803,402**	**30,881,802**
4 CLM	Procurement and Supply Mng	3,706,562	5,921,562	2,975,212	4,475,212	731,350	1,446,350
	Quality assurance	655,000	965,000	-	-	655,000	965,000
	Vigilance	270,000	450,000	-	-	270,000	450,000
4 Total		**4,631,562**	**7,336,562**	**2,975,212**	**4,475,212**	**1,656,350**	**2,861,350**
5 SBC & A	IEC	12,642,680	20,348,015	4,694,576	7,094,576	7,948,104	13,253,439
	Vulnerable groups	1,620,954	2,473,423	419,832	419,832	1,201,122	2,053,591
	CBMC	1,540,338	2,440,071	342,362	402,362	1,197,976	2,037,710
	PP Partnership	1,001,480	1,316,866	224,108	224,108	777,372	1,092,758
	Advocacy	1,144,959	1,938,745	273,997	275,997	870,962	1,662,748
Total		**17,950,411**	**28,517,121**	**5,954,875**	**8,416,875**	**11,995,536**	**20,100,245**
6 LP&R	Leadership	19,413,858	31,412,329	10,448,851	14,676,051	8,965,006	16,736,278
	Profile	13,485,962	22,415,648	9,179,198	14,826,998	4,306,765	7,588,651
	Multi sect	6,329,733	8,666,690	230,000	280,000	6,099,733	8,386,690
Total		**39,229,553**	**62,494,667**	**19,858,049**	**29,783,049**	**19,371,504**	**32,711,618**
Grand Total		**539,905,248**	**953,284,890**	**310,741,802**	**412,629,021**	**229,163,447**	**540,655,868**

Annex 9: Budget needs, anticipated funds and gaps by service delivery mechanisms for the periods 2021-2023 and 2021-2025 (from Business plan 2021-2025)

SO: strategic Objective; SA: Strategic Approach; SDM: Service delivery mechanism; IMVC: Integrated Malaria Vector Control; CLM: Commodities and Logistic Management; PSM: Procurement and Supply Management; MCM: Malaria Case Management; SME: Surveillance, Monitoring & Evaluation; SBC: Social Behavior Change & Advocacy; LP&R: Leadership, Partnership and Resource Mobilization; LLIN: Long Lasting Insecticide Treated Nets; SNP: School Net Program; TRC: Targeted replacement Campaign; ANC: Ante natal clinic; EPI: expanded program of Immunization; IRS: Indoor Residual Spray; LSM: Larval Source Management; ACT Artemisinine Combination Therapies; ACD: Active Case Detection; IPT: Intermittent Preventive Therapies; SMC: Seasonal Malaria Chemoprevention; MDA: Mass drug Administration

SA	SDM #	SDM	Needs 2021-2023	Needs 2021-2025	Available 2021-2023	Available 2021-2025	Gap 2021-2023	Gap 2021-2025
IMVC								
LLIN	1.1.1	TRC implementation	719,692	1,142,026	684,802	684,802	34,890	457,224
	PSM	TRC STD	2,246,035	3,941,354	11,759,392	11,759,392	394,597-	9,332,138
		TRC PBO	9,907,955	17,150,176				
	1.1.2	SNP implementation	24,513,034	40,526,390	24,182,017	39,341,939	331,017	1,184,451
	PSM	SNP STD	6,166,335	10,393,690	45,046,107	67,342,699	6,812,317	20,067,476
		SNP PBO	45,692,089	77,016,484				
	1.1.3	RCH implementation	382,117	650,247	117,512	117,512	264,605	532,735
	PSM	ANC STD	5,569,451	9,558,255	47,336,020	47,336,020	1,278,062	36,355,827
		ANC PBO	20,274,094	34,939,386				
		EPI STD	5,512,642	9,455,373				
		EPI PBO	17,257,894	29,738,832				
	1.1.4	Special groups implementation	533,000	884,000	490,075	490,075	42,925	393,925
	1.1.5	Commercial	20,000	30,000	-	-	20,000	30,000
		Buffer STD	2,153,734	3,779,384	-	-	2,153,734	3,779,384
		Buffer PBO	9,438,737	16,337,982	-	-	9,438,737	16,337,982
IRS	1.2.1	National Readiness	183,852	300,778	-	-	183,852	300,778
	1.2.2	Council Readiness	400,241	541,651	-	-	400,241	541,651

SA	SDM #	SDM	Needs 2021-2023	Needs 2021-2025	Available 2021-2023	Available 2021-2025	Gap 2021-2023	Gap 2021-2025
	1.2.3	Targeted IRS	29,062,827	46,048,764	13,350,000	22,250,000	15,712,827	23,798,764
		Targeted IRS Insecticides	56,149,510	110,629,964	9,000,000	15,000,000	47,149,510	95,629,964
	1.2.4	Focal IRS	530,753	1,230,333	-	-	530,753	1,230,333
		Focal IRS insecticides	426,997	989,817	-	-	426,997	989,817
LSM	1.3.1	National Preparedness	180,000	220,000	150,000	187,500	30,000	32,500
	1.3.2	Council Preparedness	929,390	1,239,187	125,957	148,434	803,433	1,090,753
	1.3.3	Bio Larviciding Implementation	5,114,587	11,579,080	2,224,043	4,064,066	2,890,544	7,515,013
	1.3.4	Environmental Management	300,000	500,000	-	-	300,000	500,000
		Bio Larviciding procurement	29,364,998	68,518,328	6,578,680	10,860,200	22,786,318	57,658,128
Oth	1.4.1	Operational Research	252,558	352,558	52,558	52,558	200,000	300,000
	1.4.2	Resistance Management	475,000	475,000	150,731	150,731	324,269	324,269
MDT&PT								
Diagnosis	2.1.1	Public	181,000	362,000	180,756	180,756	244	181,244
	PSM	microscopy	5,243,825	8,382,068	5,243,825	8,382,068	-	-
		mRDT	36,330,407	61,374,057	34,136,642	34,136,642	2,193,765	27,237,415
		PCR	2,991,743	4,457,217	-	-	2,991,743	4,457,217
	2.1.2	Private	220,000	420,000	151,395	151,395	68,605	268,605
	2.1.3	Community	2,659,557	4,432,595	-	-	2,659,557	4,432,595
	2.1.4	QA QC	332,609	543,478	-	-	332,609	543,478
	2.1.5	Other	60,000	100,000	-	-	60,000	100,000
Treatment	2.2.1	Public	11,573,038	18,442,104	10,664,182	16,464,182	908,855	1,977,922
	PSM	ACT	28,311,704	48,576,852	20,150,859	24,361,259	8,160,845	24,215,593
		Artesunate Inj	8,724,224	14,294,798	7,760,123	9,089,723	964,101	5,205,075
	2.2.2	Private	115,000	175,000	-	-	115,000	175,000
	2.2.3	Community	2,224,223	3,604,483	1,756,307	2,156,307	467,916	1,448,176
	2.2.4	Severe Malaria Management	1,620,939	2,217,094	504,928	504,928	1,116,011	1,712,166
Preventive Therapies	2.3.1	IPTp	3,654,741	6,091,235	1,350,000	2,250,000	2,304,741	3,841,235
	2.3.2	IPTi	530,000	550,000	54,097	54,097	475,903	495,903

SA	SDM #	SDM	Needs 2021-2023	Needs 2021-2025	Available 2021-2023	Available 2021-2025	Gap 2021-2023	Gap 2021-2025
	2.3.3	IPT other vulnerable	8,546,149	16,442,292	335,396	335,396	8,210,753	16,106,896
	PSM	IPTi	480,170	822,903	480,170	822,903	-	-
		IPTp	7,943,049	13,684,258	7,943,049	13,684,258	-	-
		Preventive Therapies	-	-	-	-	-	-
		SMC	436,061	1,059,909	-	-	436,061	1,059,909
		SCD	55,194	94,328	-	-	55,194	94,328
		PT for Risk groups	8,818,073	17,069,743	551,122	551,122	8,266,951	16,518,621
	2.3.4	Vaccine	-	-	-	-	-	-
Special Groups & Situations	2.4.1	Outbreak MCM	66,000	110,000	-	-	66,000	110,000
	2.4.2	ACD	30,000	50,000	-	-	30,000	50,000
	2.4.3	MDA & FTAT	3,750,000	6,250,000	1,150,000	1,150,000	2,600,000	5,100,000
	2.4.4	Special groups	566,304	1,007,609	261,006	261,006	305,298	746,603
	PSM	ACT	104,988	155,297	-	-	104,988	155,297
		ACD	4,723	11,672	-	-	4,723	11,672
		MDA	2,297,128	3,397,899	-	-	2,297,128	3,397,899
		PQ	11,300	22,197	21,998	21,998	-10,697	199
		ACD	368,444	909,271	-	-	368,444	909,271
SME								
Surveillance	3.1.1	HMIS	12,500,000	19,500,000	4,466,165	6,966,165	8,033,835	12,533,835
	3.1.2	MEEDS	2,180,000	2,880,000	652,880	1,152,880	1,527,120	1,727,120
	3.1.3	CBS	2,760,000	5,150,000	1,576,454	1,576,454	1,183,546	3,573,546
Periodic surveys	3.2.1	MIS & SMPS	4,490,000	6,410,000	1,386,740	1,386,740	3,103,260	5,023,260
	3.2.2	ANC	30,000	50,000	-	-	30,000	50,000
	3.2.3	TES	1,350,000	2,250,000	1,259,772	1,859,772	90,228	390,228
	3.2.4	MVS	1,283,698	1,823,698	673,500	673,500	610,199	1,150,199
	3.2.5	IST	780,000	1,300,000	750,000	1,250,000	30,000	50,000
	3.2.6	Programmatic MVS	1,050,000	1,705,000	750,000	1,250,000	300,000	455,000

SA	SDM #	SDM	Needs 2021-2023	Needs 2021-2025	Available 2021-2023	Available 2021-2025	Gap 2021-2023	Gap 2021-2025
	3.2.7	Molecular Surveillance	4,530,000	7,550,000	4,500,000	6,000,000	30,000	1,550,000
Strategic Information	3.3.1	Micro strata	1,549,000	1,862,400	523,082	523,082	1,025,918	1,339,318
	3.3.2	Strategic Repository	2,350,000	3,600,000	2,060,704	3,260,704	289,296	339,296
	3.3.3	MPR/MTR	350,000	700,000	-	-	350,000	700,000
	3.3.4	Operational Research	1,650,000	2,750,000	450,000	750,000	1,200,000	2,000,000
CLM								
PSM	4.1.1.	Quantification	190,000	290,000	27,698	27,698	162,302	262,302
	4.1.2	Procurement	2,250,000	3,750,000	2,250,000	3,750,000	-	-
	4.1.3.1	PSM VC	302,540	422,540	-	-	302,540	422,540
	4.1.3.2	PSM MCM	964,022	1,459,022	697,515	697,515	266,508	761,508
	4.1.4	Point of care	-	-	-	-	-	-
QA	4.2.1	QA/QC	-	-	-	-	-	-
	4.2.2	PSM MCM	415,000	665,000	-	-	415,000	665,000
	4.2.3	PSM VC	240,000	300,000	-	-	240,000	300,000
Vigilance	4.3.1	Pharmaceutical Vigilance	180,000	300,000	-	-	180,000	300,000
	4.3.2	VC vigilance	90,000	150,000	-	-	90,000	150,000
SBC&A								
IEC	5.1.1	Health workers	1,197,963	1,629,605	50,090	50,090	1,147,873	1,579,515
	5.1.2	Capacity of CHW	2,055,520	2,685,041	272,382	272,382	1,783,139	2,412,659
	5.1.3	Mass Media	9,389,197	16,033,369	4,372,105	6,772,105	5,017,092	9,261,265
Vulnerable groups	5.2.1	Outreach	517,458	751,558	216,259	216,259	301,200	535,299
	5.2.2	School	743,496	1,261,865	68,409	68,409	675,087	1,193,457
	5.2.3	Gender	360,000	460,000	135,164	135,164	224,836	324,836
CBMC	5.3.1	Community based interventions	1,540,338	2,440,071	342,362	402,362	1,197,976	2,037,710
PPP	5.4.1	Partnership development	1,001,480	1,316,866	224,108	224,108	777,372	1,092,758
Advocacy	5.5.1	Advocacy	417,377	714,087	28,365	28,365	389,012	685,722
	5.5.2	Campaign	727,582	1,224,658	245,632	247,632	481,950	977,026
LP&R								

SA	SDM #	SDM	Needs 2021-2023	Needs 2021-2025	Available 2021-2023	Available 2021-2025	Gap 2021-2023	Gap 2021-2025
Leadership	6.1.1	Governance	277,920	463,200	25,705	25,705	252,215	437,495
	6.1.2	Strategy development	1,582,105	2,053,374	1,171,235	1,281,635	410,870	771,740
	6.1.3	HR development	12,508,706	20,767,821	7,880,686	11,797,486	4,628,020	8,970,335
	6.1.4	Supervision and verification	5,045,127	8,127,934	1,371,225	1,571,225	3,673,902	6,556,709
Profile	6.2.1	Resource mobilization	391,304	782,609	-	-	391,304	782,609
	6.2.2	Operational Plan	162,435	443,304	16,737	16,737	145,698	426,567
	6.2.3	Capacity Building	4,261,414	6,738,387	1,274,260	1,663,260	2,987,154	5,075,127
	6.2.4	Policy & Guidelines	8,670,809	14,451,348	7,888,200	13,147,000	782,609	1,304,348
Multi sect	6.3.1	Cross border	2,808,262	3,951,305	170,000	200,000	2,638,262	3,751,305
	6.3.2	Multi-sectoral Action Plan	3,521,471	4,715,384	60,000	80,000	3,461,471	4,635,384
			539,905,248	**953,284,890**	**310,741,802**	**412,629,021**	**229,163,447**	**540,655,868**