

REPUBLIC OF RWANDA



MINISTRY OF HEALTH

RWANDA MALARIA STRATEGIC PLAN 2020-2024



May 2020

PREFACE

The Ministry of Health and the Rwanda Biomedical Centre have made significant progress in reducing malaria incidence from 409 per 1,000 population in FY2016/17 to 321 per 1,000 population in FY2018/19. These achievements have been possible with visionary leadership and accountability which was enhanced by implementation of high impact preventive interventions of IRS and LLINs distribution as well as innovation such as community based interventions, access to community health insurance, and performance based financing.

The main goal of this 2020 - 2024 Malaria Strategic Plan (MSP) is to reduce malaria morbidity and mortality by at least 50% of the 2019 levels by 2024. The focus, vision, mission, strategic objectives and core values articulated in this MSP were discussed and agreed upon through a highly participatory and consultative country process involving multi-sectoral stakeholders from government ministries and departments, development partners, the private sector, national and international non-governmental organizations, research/academia, local/urban authorities and other sub-national stakeholders.

A comprehensive end term review of the previous malaria national strategic plan in 2019, informed the development of the strategic direction, objectives and targets of this malaria strategic plan. This strategic plan builds on the lessons learnt during the previous malaria strategic plan and aims to accelerate the nationwide scale up of universal coverage of cost-effective malaria reduction interventions to ensure programmatic impact by 2024.

The determinants of malaria have roots beyond the health sector and the roles of other sectors will be harnessed to prevent and control malaria in Rwanda. A multi- sectoral approach led by the Ministry of Health will have added value in promoting effective financing synergies between malaria control and other key development agendas. It is imperative that stakeholders i.e. the Government, development partners and the private sector join hands to avail and commit the necessary resources.

The Ministry of Health is committed to continue in its efforts to significantly reduce the burden of malaria in Rwanda with collaborative financial and technical support from key stakeholders.



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ACKNOWLEDGEMENT

The Ministry of Health and the Rwanda Biomedical Centre wish to express deep appreciation and sincere thanks to all who participated in the successful development of this Malaria National Strategic Plan (2020-2024). The commitment, technical support and overall stewardship from the members of the Senior Management Team, the World Health Organization (Headquarters, Africa Regional Office, Inter-country Support Team and the Rwanda Country Office), development partners and implementing partners in malaria control are highly appreciated. The dedication, technical input and participation of members of the Extended Malaria Technical Working Group was exceptional. The contributions and participation of District Representatives, Health Care Workers, the Ministry of Education, the Rwanda Correctional Services, as well as the Civil Society and Faith-based Organizations, and the private sector have made the strategy a truly multisector response to the challenges of malaria in Rwanda.



Dr. Sabin NSANZIMANA
Director General RBC

ACRONYMS

AL	Artemether-Lumafantrine
ALMA	African Leaders Malaria Alliance
BIOS	Biomedical Services
CHW	Community Health Worker
CPDS	Coordination Procurement, Distribution System
DHS	Demographic and Health Survey
DHIS2	District Health Information System
EAC	Eastern African Community
EIR	Entomologic Inoculation Rate
EMSP	Extended Malaria Strategic Plan
FY	Fiscal Year
GDP	Gross Domestic Product
GIS	Geographical Information Systems
GOR	Government of Rwanda
HBM	Home-Based Management
HBMA	Home-Based Management for Adults
HMIS	Health management information system
HRH	Human Resources for Health
i-CCM	Integrated Community Case Management
HSSP	Health Sector Strategic Plan
ICT	Information and Communications Technology
IHDPC	Institute of HIV/AIDS, Disease Prevention and Control
IRM	Insecticide Resistance Management
IRS	Indoor Residual Spraying
ITN	Insecticide-Treated Bed Net
IVM	Integrated Vector Management
LLIN	Long-Lasting Insecticide-treated Net
MDG	Millennium Development Goals
MINECOFIN	Ministry of Economy and Finance
MIS	Malaria Indicator Survey
MPPD	Medical Procurement and Product Division
MOH	Ministry of Health
MOPDD	Malaria & Other Parasitic Diseases Division
MSP	Malaria Strategic Plan
MTEF	Medium Term Expenditure Framework
MTR	Mid Term Review
NGOs	Non-Governmental Organizations
NISR	National Institute of Statistics of Rwanda
NMCP	National Malaria Control Program
NRL	National Reference Laboratory
NSP	Malaria Strategic Plan
PBF	Performance Based Financing
PMI	President's Malaria Initiative
PSM	Procurement Supply Management
QA/QC	Quality Assurance/Quality Control
R-HMIS	Rwanda Health Management Information System

RBC	Rwanda Biomedical Centre
RBM	Roll Back Malaria Partnership
RDT	Rapid Diagnostic Test
RPPA	Rwanda Public Procurement Authority
SBCC	Social Behavior Change Communication
SDG	Sustainable Development Goals
SIS-Com	Systeme d'Information Sanitaire-Communautaire
SMS	Short Message Service
SMM	Senior Management Meeting
SPR	Slide Positivity Rate
TPR	Test Positivity Rate
WHO	World Health Organization

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EXECUTIVE SUMMARY

The Malaria National Strategic Plan (NSP) 2020-2024 articulates the interventions that will be put in place towards the improvement of the health status of Rwandans and the fight against poverty by reducing the significant socioeconomic burden due to malaria. The NSP was developed through consultations with health service providers at all levels of the health care system, development partners, experts and draws on the lessons learned and recommendations from the Malaria Program Review (MPR) undertaken in October/November 2019.

VISION

The Vision of the NSP 2020-2024 is Rwanda free from malaria as a way to contribute to the socio economic development.

MISSION

To contribute towards the social- economic development of Rwanda through malaria control by strengthening and implementing appropriate interventions and quality health delivery services in partnership with stakeholders.

GOAL

By 2024, reduce malaria morbidity and mortality by at least 50% of the 2019 levels

OBJECTIVES

1. By 2024, at least 85% of population at risk will be effectively protected with preventive interventions;
2. All suspected malaria cases are promptly tested and treated in line with the national guidelines;
3. By 2024, strengthen surveillance and reporting in order to provide complete, timely and accurate information for appropriate decision making at all levels;
4. Strengthen coordination, collaboration, procurement & supply management and effective program management at all levels;
5. By 2024, 85% of the population at risk will have correct and consistent practices and behaviors towards malaria control interventions.

IMPLEMENTATION

The main interventions in the Rwanda Malaria NSP 2020-2024 are as follows:

Vector control (including Long-Lasting Insecticide-treated Nets, Indoor Residual Spraying, Larval Source Management); malaria diagnosis and treatment; monitoring, evaluation and operational research (including epidemic preparedness and response); malaria social behaviour change communication and programme management. Their impact will be regularly monitored and evaluated; integration using a multi-sectoral approach.

The guiding principles for the implementation of the NSP are: person-centeredness; equity and accessibility, provision of quality health care services; ownership, leadership and political will through promoting a sense of

stewardship, accountability and transparency; implementation of evidence-based interventions and; multisectoral involvement in implementation.

BUDGET

Costing of the Malaria NSP 2020-2024 was done as an activity-based costing and has been estimated at RWF 295,429,979,176.67 (US\$ 280,320,694) for the four year period. The total funding projected to be available is US\$ 206,826,519.51 (74%) thus resulting in a funding gap of US \$73,494,174.27 (26%) to be mobilized from different sources.

CHAPTER 1: INTRODUCTION

1. POLICY AND PROGRAMMING ENVIRONMENT

Malaria remains a public health priority in Rwanda with the whole population at risk of malaria infection. Rwanda continues to make progress in malaria control through multifaceted evidence based approaches namely: information, education and communication; distribution of Long-Lasting Insecticidal Nets (LLINs); Indoor Residual Spraying (IRS) and; early diagnosis and effective management of malaria cases as guided by the National Malaria Strategy. This strategic plan has been aligned to the Sustainable Development Goals (SDGs), the World Health Organisation (WHO)'s Global Technical Strategy (GTS) 2016-2030, RBM Partnership's Global Malaria Action Plan (GMAP) 2016-2030 and Action and Investment to defeat Malaria 2016-2030 (AIM). It is also in line at national level with: the Rwanda Health Sector Policy which provides the overall basis of national health planning and, aims to ensure universal accessibility (in geographical and financial terms) of equitable and affordable quality health services (preventative, curative, rehabilitative and promotional services) for all Rwandans; the Health Sector Strategic Plan Four (HSSP4) 2018-2024; the first pillar of Rwanda's Vision 2050 which addresses the quality of life for all Rwandans including universal access to healthcare and services; the Results Based Management Policy (RBM) and; the National Strategy for Transformation (NST1) 2017-2024. Rwanda stresses equality and universal access of health services as stipulated in the HSSP4 2018-2024 and Vision 2050. In order to ensure alignment to the national strategies and planning cycle this Malaria National Strategic Plan will cover the time frame from July 2020 to June 2024.

2. PURPOSE OF THE MALARIA NATIONAL STRATEGIC PLAN 2020-2024

The purpose of the Malaria National Strategic Plan (NSP) 2020–2024 is to provide key strategic direction that will accelerate progress towards malaria reduction in Rwanda. The NSP guides the implementation of key strategies by all stakeholders in malaria response in Rwanda with a common goal of reducing malaria morbidity and mortality by at least 50% of the 2019 levels. This document is outlined as a framework, guided and coordinated by the Malaria and Other Parasitic Diseases Division (MOPDD). With support from various stakeholders, this strategic plan will guide annual operational planning by the Ministry of Health (MOH) and key implementing partners and also guide the monitoring, and periodic evaluation of performance, based on the goals, objectives, and target areas outlined herein. The vision of this strategy is a Rwanda free from malaria as a way to contribute to the Rwanda socio economic development.

3. PROCESS OF DEVELOPING THE MALARIA NATIONAL STRATEGIC PLAN 2020-2024

This NSP builds upon the previous Malaria Strategic Plan (2013-2020), which was updated following a midterm review in 2016. In October 2019, an end term Malaria Programme Review (MPR) took place, led by the MOPDD and supported by WHO and partners. The MPR was conducted in three phases: planning, desk reviews with the production of the thematic reports; and finally, the intensive field review with the help of external reviewers. Field visits were undertaken in selected districts, district hospitals, district pharmacies, health facilities, community health workers/communities and private health clinics.

This strategic plan draws upon national experience and lessons learned from the MPR, global technical strategies and expertise, and from the current country context. Its content ensures that Rwanda's response to malaria remains aligned with global malaria goals and guidance. It was developed through a process of intensive and participative analysis and planning which took place over a one-month period (November 2019) led by the Rwanda Malaria and Other Parasitic Diseases Division, facilitated by external WHO and RBM consultants, and

involving active representation from all key stakeholder groups including the representatives from the Ministry of Health/RBC, Ministry of Education (MINEDUC), Ministry of Environment and Natural Resources (MINIRENA), Ministry of Agriculture and Animal Resources (MINAGRI); Rwanda Correctional Service (RCS); development partners; implementing partners and; representatives from academia and research institutions. Further consultation with the regional, district and community stakeholders were held prior to finalization of this strategic plan. The plan was also technically reviewed by WHO, RBM and the Presidential Malaria Initiative (PMI). Costing of the strategic plan was conducted concurrently with the planning process and, aligned to the Government of Rwanda (GoR) fiscal years (which run from 1st July to 30th June) for the implementation period 2020-2024.

A validation workshop was carried out to adopt the comprehensive costed Rwanda NSP which was then adopted by the Senior Management Meeting (SMM) of the Ministry of Health before dissemination to all implementing entities.

CHAPTER 2: COUNTRY PROFILE

1. OVERVIEW

Figure 1: Map of Rwanda

Rwanda is in the great lakes region of Central Africa situated South of the equator between 1°4' and 2°51' south latitude and 28°63' and 30°54' East longitude with a total surface area of 26,338 square km of which 24,668 sq km is land and 1,670 sq km is water. It is a landlocked country bordered by Uganda to the North, Tanzania to the East, the Democratic Republic of the Congo to the West, and Burundi to the South.



2. DEMOGRAPHIC DATA

In 2019, the Rwanda's population is estimated at 12.63 million according to census estimates. The population density of Rwanda is the highest in Africa at 479.5 people per square kilometer. Administratively, Rwanda consists of 4 provinces and Kigali City, composed of 30 districts, 416 sectors, 2148 cells, and 14,837 villages that are further divided into 14,837 villages ("imudugudu") of 50-100 households each¹. The population is largely rural with almost 84 percent of the country's residents living in rural areas. Among the total urban population, 49 percent live in City of Kigali, the capital of the country. The population is predominantly young, with 39.5 percent of all Rwandans under age 15².

3. GEOGRAPHY

Rwanda forms part of the highlands of eastern and central Africa, with mountainous relief and an average elevation of 1,700 meters. There are three distinct geographical regions. Western and north-central Rwanda is made up of the mountains and foothills of the Congo-Nile Divide, the Virunga volcano range, and the Northern highlands. In Rwanda's centre, mountainous terrain gives way to the rolling hills that give the country its nickname, "Land of a Thousand Hills." Here the average elevation varies between 1,500 and 2,000 meters.

4. CLIMATE

Rwanda enjoys a temperate, sub-equatorial climate with average yearly temperatures of around 18.5°C. The average annual rainfall is 1,250 millimeters and occurs in two rainy seasons of differing lengths, alternating with

¹ Fourth Population and Housing Census 2012

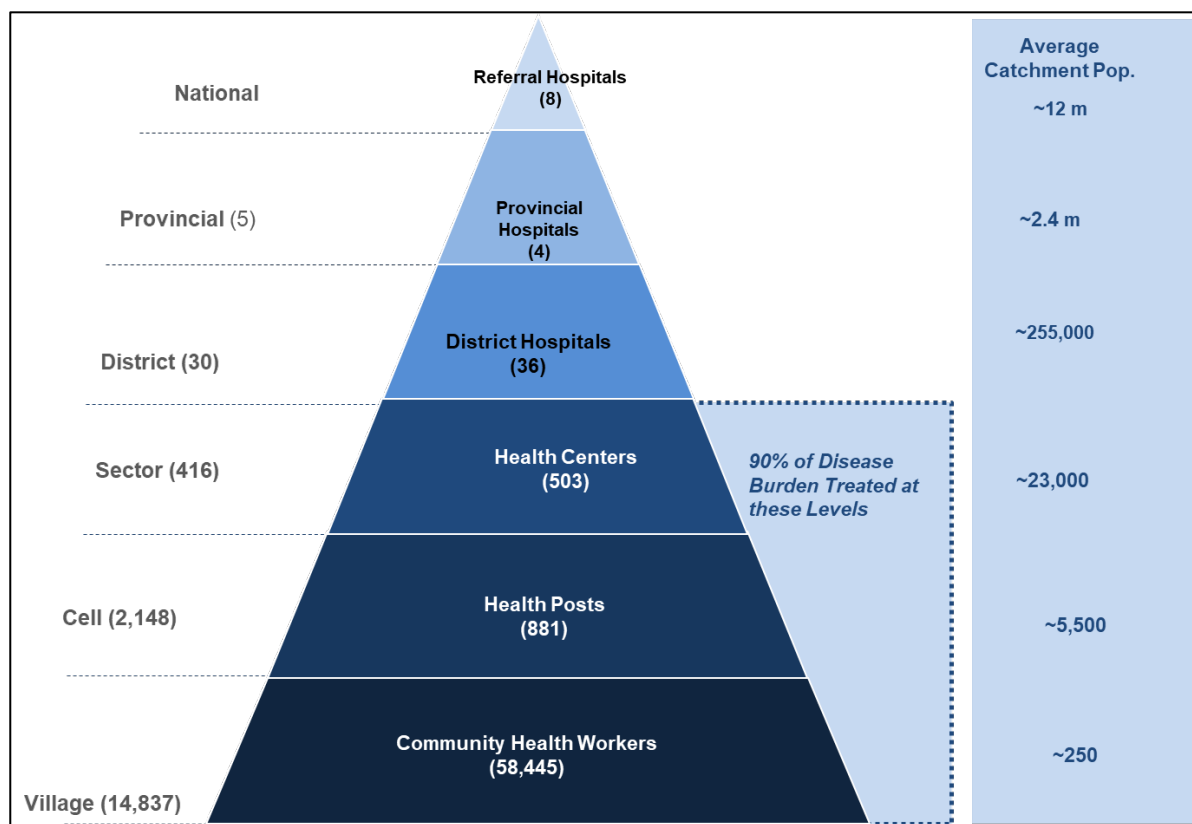
² Rwanda Demographics profile, 2019

one long and one short dry season. Rwanda has a dense network of rivers and streams, and several lakes surrounded by wetlands.

5. HEALTH SYSTEM IN RWANDA

Health services in Rwanda are provided through the public sector, government assisted health (agrée) facilities and the private sector. The public sector has 3 levels: the central level, the intermediate level and the peripheral level. The central level consists primarily of the MOH and the referral health facilities it manages. The intermediate level consists of the provincial and district hospitals. There are 4 provincial administrative regions namely Northern, Eastern, Western and, Southern provinces and Kigali City. The peripheral level consists of the health centres, health posts and Community Health Workers (CHWs). *Figure 2.*

Figure 2: Rwanda Health System Structure



The MOH oversees, coordinates and regulates all programs aimed at improving the health status of the population. The MOH is responsible for the formulation of health policies, strategic planning, high-level technical supervision, monitoring and evaluation of the health situation as well as the coordination of resources at the national level. MoH consists of the core MoH and affiliated institutions including the Rwanda Biomedical Centre (RBC) and the FDA. The RBC coordinates health services provided through 2 main departments: the Biomedical services (BIOS) and the Institute of HIV/AIDS, Diseases Prevention and Control (IHDPCC) which includes the MOPDD.

The country has a health development strategy that has a decentralized management and district-level care approach. Additionally, financial and logistic resource management has also been decentralized. The main role of each district is to improve quality of hospitals, enhance general hygiene, assist sectors to promote better nutrition and establish a health insurance scheme within its area.

The sector level aims to enhance the functioning of health centers by establishing health center executive committees, monitoring the functioning of health centers, mobilizing resources, building capacity, designating areas for the disposal of waste products, and directing the use of community health workers and other community based associations for community outreach activities.

The cell level has the role of integrating and harmonizing cell and Umudugudu activities by monitoring the functioning of health counselors and other volunteers in the Umudugudu in delivery of basic health care services. The cell level also monitors how health insurance schemes are working and the frequency with which the population joins these schemes.

The Umudugudu or community implements health policies by providing community health workers; creating awareness of hygiene and primary health care (including distribution of insecticide repellants, mosquito nets, etc) in the community; mobilizing the communities to join health insurance schemes; giving children basic emergency health care before taking them to health facilities; sensitizing pregnant women of the need for antenatal care and facility-based deliveries; registering deaths and, submitting reports on death.

Services are provided by a variety of providers including public, faith-based, private-for profit, and non-governmental organizations (NGOs). The public health facilities represent about 65% of the total number of health facilities in Rwanda. Faith-based organizations (FBOs) play an important role in the health system. In 2018, 18% of primary and secondary health facilities were congregational structures (FBOs)³ and 1% were managed by parastatal organizations. These authorized structures pledge to follow the policy of the Ministry of Health to which they are linked by an agreement.

The private sector, representing less than 35%, is involved mainly in treatment activities and is predominantly located in urban areas. The services offered do not always take into account the needs of the population as a whole, but rather the capacity of patients to pay for the care provided.

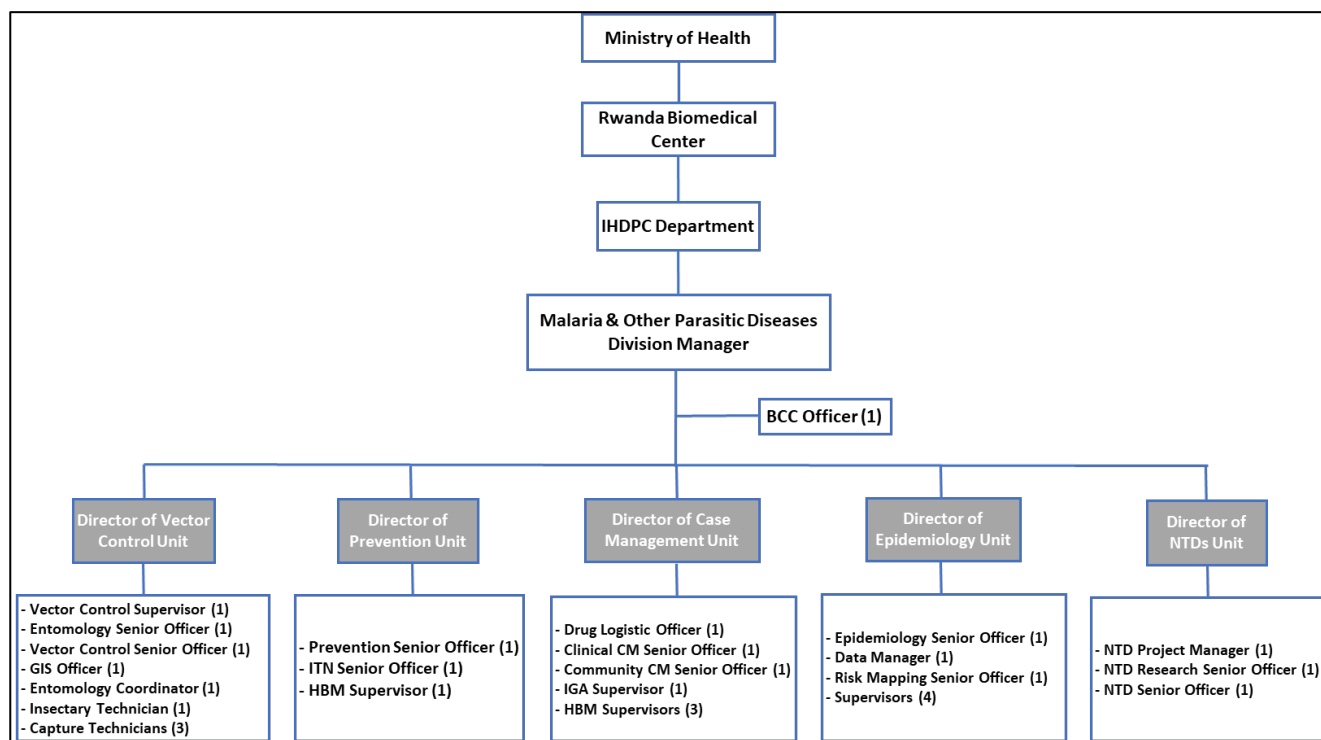
Rwanda made strides towards ensuring equality and universal access of health services through the introduction of Community Based Health Insurance (CBHI). Health insurance coverage is relatively high with 79% of the households having at least one family member with health insurance (2014-15 DHS) and among those insured, 97% have CHBI (mutuelles).

6. MALARIA AND OTHER PARASITIC DISEASES DIVISION

The Malaria and Other Parasitic Diseases Division (MOPDD) is responsible for prevention, vector control and case management for malaria and curbing morbidity and mortality of Neglected Tropical Diseases (NTDs). In a well-defined organizational structure, MOPDD is housed as a Division within the Rwanda Biomedical Centre (RBC) which in turn falls under the purview of the MoH (Figure 3). Within the MOPDD Division, there are separate Units for malaria vector control, prevention, case management, epidemiology and NTDs.

³ Rwanda Master Facility List, Planning & HFIS TWG meeting September 7, 2018

Figure 3: Organizational Structure of MOPDD



CHAPTER 3: MALARIA SITUATIONAL ANALYSIS

1. HISTORICAL PERSPECTIVE OF MALARIA

From 2005 to 2011 Rwanda achieved significant reductions in the burden of malaria through the successful implementation and scale-up of malaria control interventions. In 2008, malaria dropped from being the number one cause of morbidity in children under age five years of age to the number three cause of morbidity, and by 2012 dropped further to number four (Rwanda HMIS).

However, from 2012 to 2016, malaria incidence increased every year in Rwanda from 48 per 1,000 population in 2012 to 403 per 1,000 in 2016. Rwanda saw more than an eight-fold increase in reported malaria cases, from 564,407 in 2012 to 4,794,778 in 2016, a 41% increase in mortality and 19% increase in test positivity rate. For a proper and effective response to this dramatic increase in malaria upsurge, the country conducted an in-depth national program data analysis to ascertain the potential causes of the increase in cases and design appropriate malaria control interventions. Among the different reasons identified were:

- a. Climate change
 - Temperature increase
 - Rain fall increase
 - Increased water bodies/irrigation with increase in rice fields
- b. Mosquito Behaviour Change
 - Mosquito Insecticide Resistance (LLINs, IRS)
 - Early and Outdoor Biting Behaviour
 - Animal Biting
- c. Low coverage in high impact malaria control interventions
 - IRS (Cost)
 - LLINs
- d. Inconsistent vector control activities
- e. Increased malaria cases detection and reporting rate from Health facilities and Community into the system

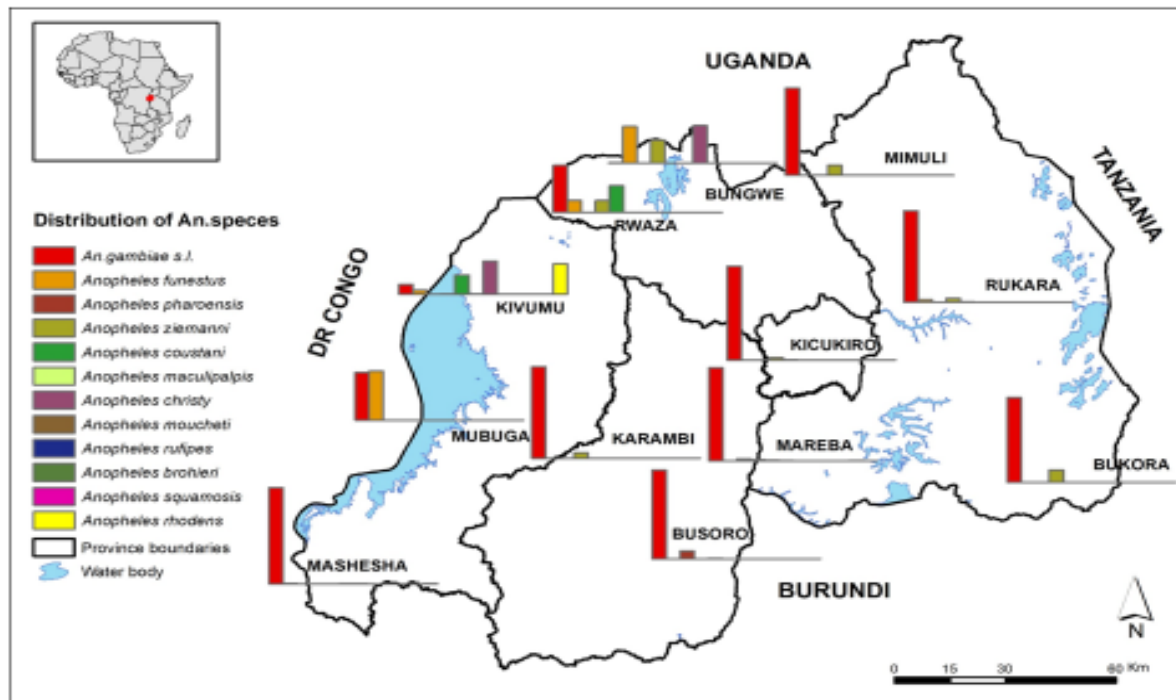
2. MALARIA VECTORS

The species of *An. arabiensis*, *An. gambiae s.s* and *An. funestus* are the malaria vectors in Rwanda. *An. arabiensis* remains the dominant species in IRS districts (68.3%) while *An. gambiae s.s* is the primary malaria vector in non IRS districts. Insecticide resistance in Rwanda is currently in the following: bendiocarb 0.1%, fenitrothion 1%, pirimiphos methyl 0.25%, DDT 4%, permethrin 0.75%, deltamethrin 0.05%, and lambdacyalothrin 0.05%. No resistance has been reported for *Fenitrothion* and to the next generation of insecticides. Rwanda conducts rotational IRS to manage insecticide resistance.

3. PARASITE SPECIES

Three parasites species namely *Plasmodium falciparum*, *Plasmodium ovale* and *Plasmodium malariae* have been detected in Rwanda to date. *P. falciparum* is by far the most common contributing 97-99% of the parasite population. The second most common species is *P. ovale* with 0.5-2% and followed by *P. malariae* 0.5-1% as mono-infection. *P. vivax* has not been detected to date in Rwanda.

Figure 4: Distribution of Anopheles Mosquitoes in Entomological Sentinel Sites



4. MALARIA TRANSMISSION

In Rwanda, malaria transmission occurs throughout the year primarily during/after the rainy seasons with peaks in May/June and November/December each year. Malaria has predictable patterns in season and level of endemicity across Rwanda with the entire population at risk. However, geographic variation and magnitude of malaria transmission remains unstable, correlated with human made breeding sites/ water bodies (such as rice cultivation, irrigation scheme, mining, quarries), variable total rainfall and degree of implementation of malaria control interventions such as mass distributions of LLINs, IRS, etc.

5. MALARIA STRATIFICATION AND MAPPING

Rwanda can be divided into four main malaria epidemiological zones based on the Annual Parasite Incidence (API) per districts as follows: (1) High Endemicity Zone: > 450 API per 1000, (2) Moderate Endemicity Zone: 250-450 API per 1000, (3) Low Endemicity Zone 100-250 API per 1000 and (4) Very Low Endemicity Zone < 100 API per 1000. This epidemiological stratification was done based on malaria situation in 2016 when the country recorded the recent malaria cases peak (HMIS2016).

Further analysis shows that some possible factors are contributing to malaria transmission in most of high and moderate endemicity districts as documented by malaria program data. These factors include (1) the low altitude with high temperature in the central and eastern part of the country, (2) mosquito breeding sites mainly linked to irrigation such as rice plantation areas, mining activities and (3) Mosquito resistance to pyrethroids found in the Eastern, Southern, Central and South-Western parts of the country (Figure 5, 6 and Table 1).

Figure 5: Rwanda Malaria Stratification and Malaria Transmission Risk Factors (2016)

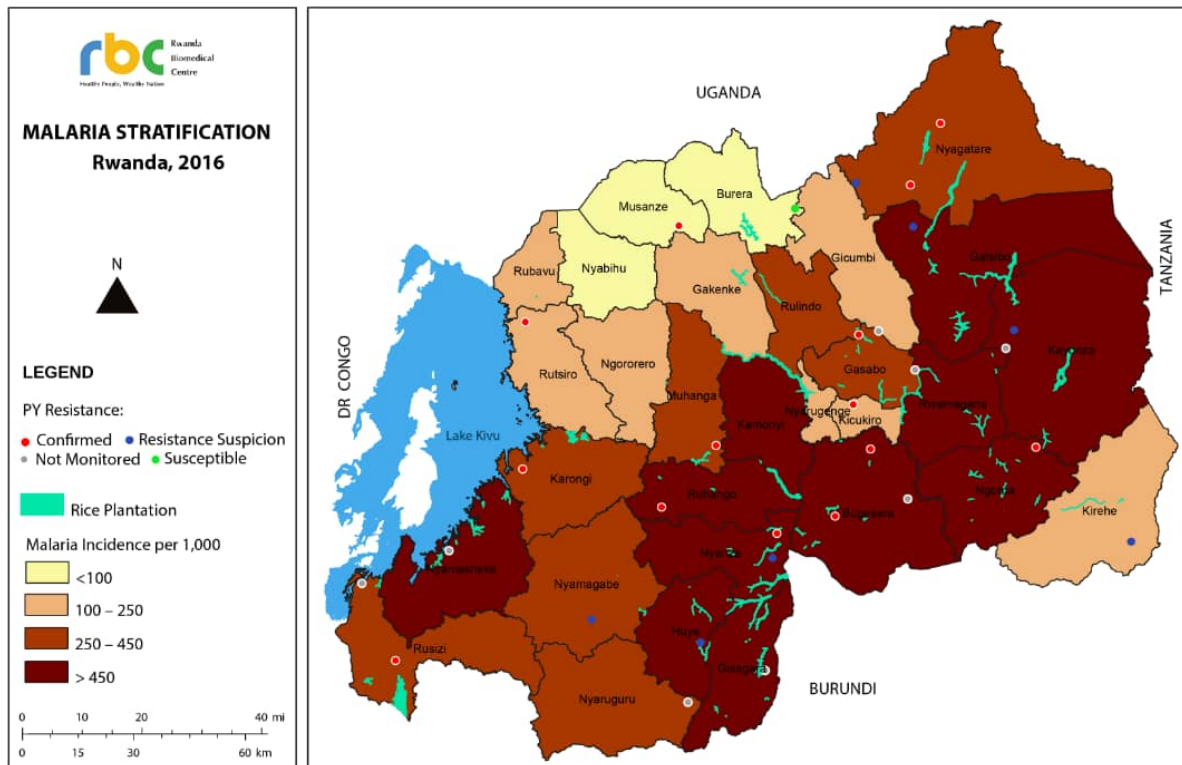
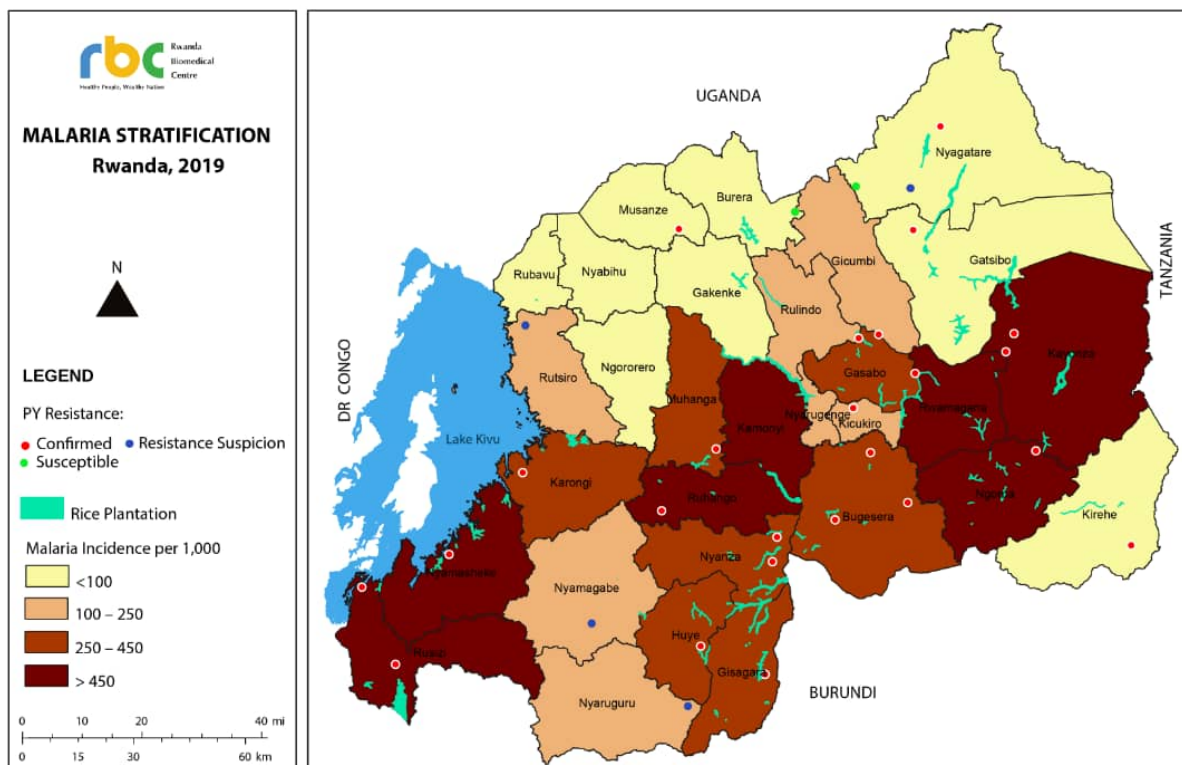


Figure 6: Rwanda Malaria Stratification and Malaria Transmission Risk Factors (2019)



Although the whole population is at risk of malaria, the incidence varies greatly between and within the different zones from less than 100 cases per 1000 population per year to over 450 cases per 1000 per year. The high incidence being correlated to the zones with mosquito resistance to pyrethroids, concentrated irrigation areas and high temperature.

The comparison of map in **Figure 5 and 6** shows the shift in incidence per district since 2016 following the implementation of sustained IRS was conducted mainly in Nyagatare, Gatsibo, Kirehe, Bugesera, Nyanza, Huye and Gisagara.

Table 1: Rwanda Malaria Stratification and Key Malaria Transmission Risk Factors (2016)

Rwanda Malaria Stratification and Key Malaria Transmission Risk Factors (2016)				
Epidemiological Strata by 2016	District	Resistance to Pyrethroid	Mosquito Breeding Sites	Population at Risk
High Endemic API >450	Huye	Yes	Yes	358,763
	Ngoma	Yes	Yes	391,958
	Kayanza	Yes	Yes	425,773
	Rwamagana	Yes	Yes	356,783
	Nyanza	Yes	Yes	374,567
	Ruhango	Yes	Yes	355,402
	Nyamasheke	Yes	Yes	409,768
	Kamonyi	Yes	Yes	383,464
	Gisagara	Yes	Yes	351,482
	Gatsibo	Yes	Yes	520,544
Bugesera	Yes	Yes	412,232	
Moderate API 250-<450	Muhanga	Yes	Yes	333,648
	Nyaruguru	Yes	Yes	323,403
	Karongi	Yes	Yes	355,593
	Rusizi	Yes	Yes	439,107
	Nyamagabe	Yes	Yes	371,320
	Nyagatare	Yes	Yes	603,290
	Gasabo	Yes	Yes	657,784
	Rulindo	Yes	Yes	305,102
Low Endemic API 100-<250	Rutsiro	No	No	350,341
	Kicukiro	Yes	Yes	380,602
	Nyarugenge	Yes	Yes	311,539
	Kirehe	Yes	Yes	399,750
	Gicumbi	Yes	Yes	419,449
	Rubavu	Yes	Yes	465,982
	Ngororero	Yes	Yes	357,946
	Gakenke	No	No	343,256
Very Low Endemic API <100	Musanze	Yes	Yes	396,986
	Burera	No	Yes	344,673
	Nyabihu	Yes	Yes	307,794

6. KEY VULNERABLE GROUPS

Key vulnerable populations in Rwanda considered to be at high risk of malaria include pregnant women, children under five years of age, refugees and prisoners. Malaria prevention and control interventions in Rwanda ensure that these key populations have access to services, in adherence to the global principle of ensuring that no one is left behind. In order, to improve geographical accessibility to health care services and ensure universal coverage to the Rwandan population in 2008, Rwanda introduced integrated community case management (iCCM) of childhood illness nationwide ensuring children under 5 years have access to early diagnosis and treatment of malaria. This Home-based Management of Malaria (HBM) conducted by both male and female Community Health Workers (CHWs), was further expanded to include all ages (adults and >5 years) in 2016 for early diagnosis and treatment to most of vulnerable groups and hard to reach people.

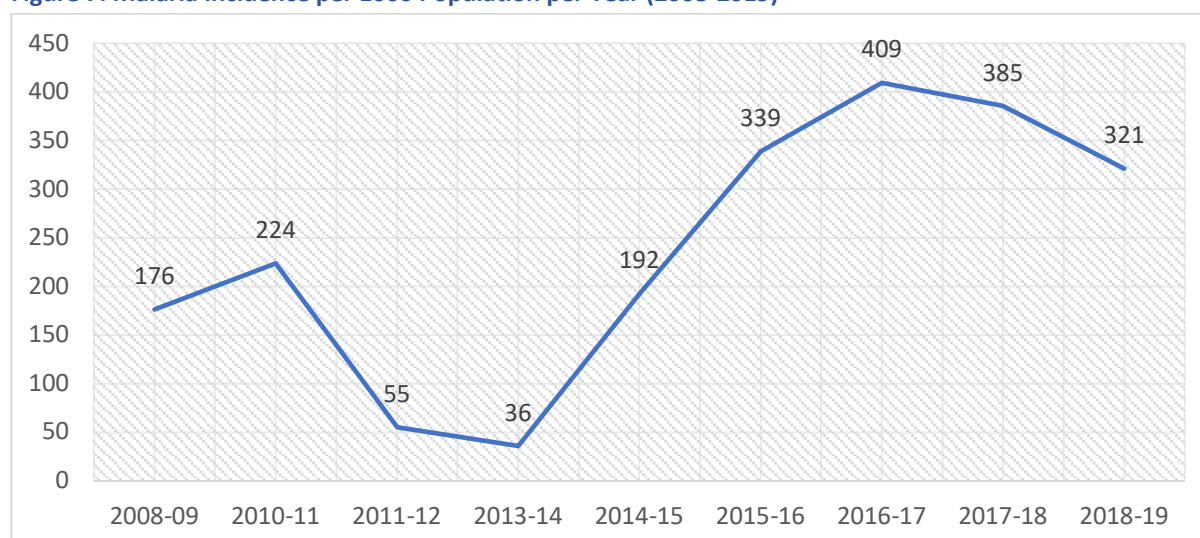
Rwanda with support from UNHCR has been hosting refugees from the Democratic Republic of Congo (DRC), Burundi and more recently Libya. Primary health services such as malaria diagnosis and treatment are provided

by UNHCR and other humanitarian actors), in refugee camps through health centres that are also accessible to the local host communities.

7. MALARIA MORBIDITY AND MORTALITY

Rwanda has made steady progress towards the epidemiological and entomological impact targets set in the MSP, 2013-2020. Although overall, the malaria incidence increased from 36 cases per 1000 in FY2013/2014 to epidemic peak of 409 per 1000 in FY2016/2017, significant progress has been made following implementation of Malaria Contingency Plan 2016-2020 (MCP) aimed to support the MSP interventions. There has been a 22% reduction in the incidence of malaria from 409 cases per 1000 persons in 2016/2017 to 321 cases/1000 persons in 2018/2019 as shown in **Figure 7**.

Figure 7: Malaria Incidence per 1000 Population per Year (2008-2019)



8. RWANDA RESPONSE TO MALARIA UPSURGE

Following the upsurge of malaria recorded in Rwanda since 2012, the Rwanda Ministry of Health developed a Malaria Contingency Plan which identified improved strategies to reduce malaria burden. These strategies also incorporated into the Extended Malaria Strategic Plan for 2013–2020 include (1) the Universal Coverage in LLINs, (2) Indoor Residual Spraying in at least 8 high burden districts, (3) Expanded Home-based Management of Malaria (HBM) to all ages with the introduction of free malaria diagnosis and treatment to the most economically vulnerable populations (Ubudehe 1 and 2), and (4) multi-sectoral collaboration for malaria response in Rwanda.

The results of combined efforts to implement key interventions of the Malaria Strategic Plan 2016-2020 are presented in the following chapter.

1. OVERVIEW

In 2019, the Rwanda NMCP with support of malaria Experts from WHO, RBM, ALMA, and partners in malaria response in Rwanda conducted an end term Malaria Programme Review (MPR) which led to the development of the 2020-2024 National Malaria Strategic Plan (NSP). The key achievements and challenges in the implementation of the Extended Malaria NSP 2016-2020 are outlined in the MPR report and highlighted below. The review period covered 2015/2016 to 2019/2020 and covered the following key areas.

I. Key Successes of Malaria Program

a. Malaria Prevention

- Distribution of 7.5 LLINs countrwide in 2016-2017
- Increased proportion of the population with access to an ITN from 64 percent (DHS 2014–2015) to 72 percent (MIS 2017)
- Increased coverage in IRS from 5 districts in 2017 to 10 districts in 2018/2019
- IRS Operational Coverage at >98% in all targeted districts
- 22% Malaria Incidence reduction from 409 per 1000 in 2016/2017 to 321 cases per 1000 in 2018/2019
- 71% Malaria Incidence reduction from 582 per 1000 in 2016 to 169 per 1000 in 2019 in seven districts with sustained IRS
- Entomological Inoculation Rate (EIR) reduced by 69% from 48 to 15 infectious bites per person per year in the review period (2016-2019).

b. Malaria Case Management

- High coverage in quality diagnosis and treatment at both community and Health Facilities levels (>99%)
- Increased proportion of malaria cases treated by CHWs from 13% in 2015//2016 to 57% in 2018/2029
- 61% reduction in Severe Malaria Cases from 2016/2017 to 2018/2019
- 61% reduction in Malaria Related Deaths from 2016/2017 to 2018/2019

c. Programme Management

- Strong Leadership and Ownership by MoH and RBC
- High Level of Political Will
- Strong Supply Chain Management System for Malaria Commodities
- Strong Health Information Systems (HMIS, SISCOM, RapidSMS, eLMS)
- Robust Technical Support by Partners
- Increased GoR and GF Funding for IRS toward the end of NSP Period (2018-2019)

II. Key Program Challenges and Gaps

a. Malaria Prevention

- Delayed procurement of LLINs
- Funding gaps to implement consistently IRS in all high burden districts (only 5 of 15 districts consistently sprayed for 3 years)
- Delayed funding of IRS in most of targeted districts
- Low level of consistent and correct use of LLINs (64%)
- Mosquito Resistance to Pyrethroid-based LLINs

b. Programme Management and HSS

- Work Load of Volunteers Community Health Workers
- Only 62% of planned program activities fully implemented
- Underestimation of the MSP 2013-2020 to the funding gap to cover the actual program needs
- Additional program needs following a significant increase in malaria cases after NSP development as presented in the Revised MCP 2017-2020
- Lack of a surveillance, epidemic preparedness and response plan

c. Social Behavior Change and Communication

- Inadequate funding for SBCC activities for regular and sustained implementation of SBCC activities at all levels
- Inadequate involvement of Local NGOs, FBOs and CSOs in SBCC Activities

III. Key Recommendations or Proposed Solutions

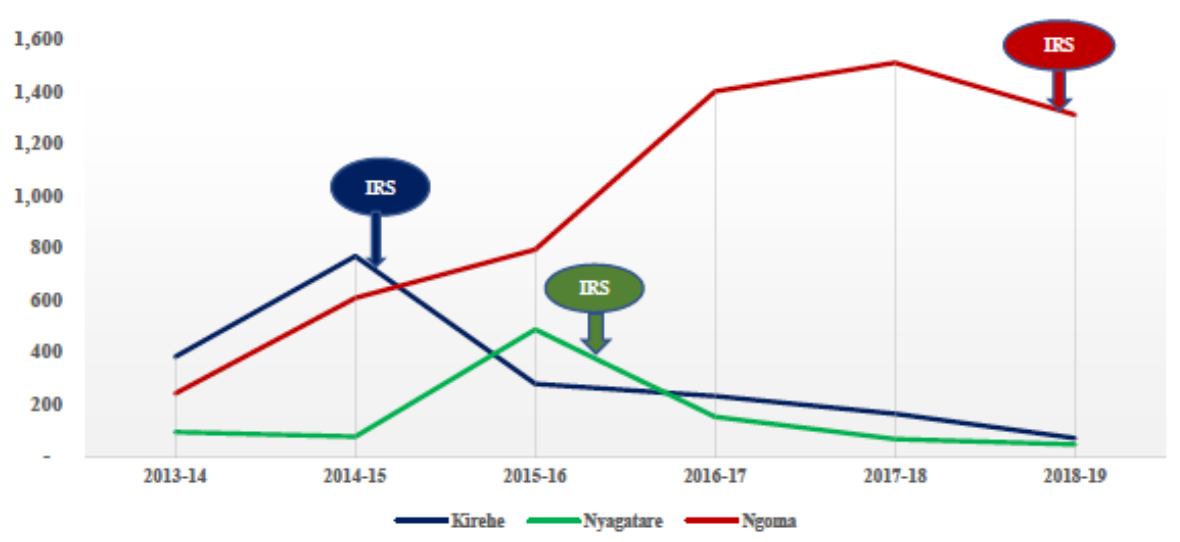
- Increase and Sustain IRS Coverage in at least 12 High Endemic Districts
- Increase awareness at community level of consistent and correct use of LLINs
- Introduce New Generation of LLINs
- Introduce innovative vector control tools for both indoor and outdoor control
- Ensure the procurement and implementation of vector control interventions are synchronized and aligned for more impact on malaria transmission
- Consider CHWs Performance Based Financing for malaria program
- Proper costing of the National Strategic Plan to capture all actual program needs
- Include Local NGOs, FBOs and CSOs in SBCC Activities

2. EFFECTIVENESS OF THE HEALTH SYSTEM IN MALARIA SERVICES DELIVERY

A. INDOOR RESIDUAL SPRAYING

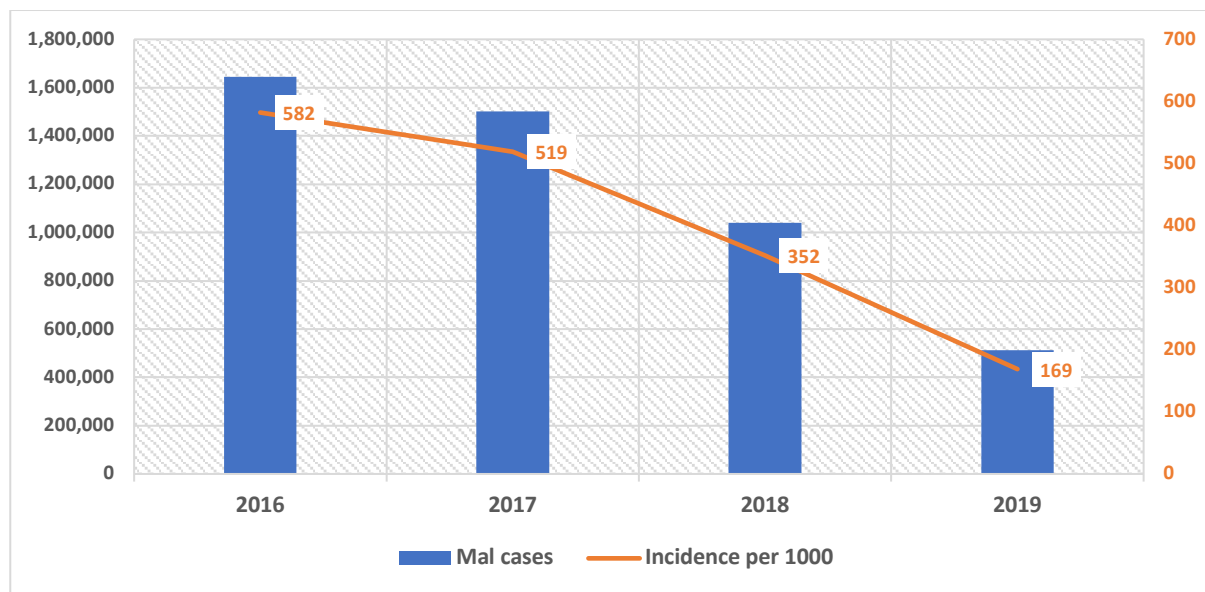
The Indoor Residual Spraying (IRS) strategy shifted from focal spraying to blanket coverage in high malaria endemic districts and is funded by GOR, GF and PMI. IRS is also conducted in the prison facilities in collaboration with the Rwanda Correctional Service. In the districts where IRS was conducted, an operational coverage of above 98% was achieved during that period in each district however the IRS implementation was irregular and did not cover all the targeted districts due to limited resources (Malaria Annual Reports 2016/17-2018/19). In 2016-2017, of the 8 targeted districts 7 were sprayed. However, only 2 were sprayed with an organophosphates insecticide which covers the two transmission seasons and the remaining 5 districts were only sprayed once with Bendiocarb instead of the required two rounds resulting in a reduced impact on reduction of malaria cases. In 2017-18, 10 districts were targeted for IRS but, due to budget constraints, IRS was implemented in only 5 of the previously sprayed 7 districts namely Bugesera, Gatsibo, Gisagara, Kirehe, and Nyagatare leaving out Nyanza and Huye. Thus, the implementation of IRS has been negatively affected by the lack of sustainable funding resulting in late application of IRS that is sometimes, not in line with the onset of the transmission season. In 2018-2019, following significant mobilization of resources Rwanda was able to conduct IRS in 10 of the targeted 15 districts. Although overall malaria incidence in Rwanda increased, a significant reduction in malaria was observed in districts where there was sustained IRS such as Nyagatare and Kirehe (as shown in **Figure 8** below) as compared to districts that received no IRS such as Ngoma district. In Kirehe district for example the malaria incidence reduced from 381 per 1000 population in 2013/14 to 69 per 1000 population in 2018/19 whereas in Ngoma district during the same period malaria incidence increased from 240 to 1,308 per 1000 population.

Figure 8: Impact of Sustained IRS in Kirehe and Nyagatare Compared to Ngoma District on Malaria Incidence per 1000 Population



Further analysis show that sustained Indoor Residual Spraying (IRS) in Seven (7) Districts (Bugesera, Kirehe, Gatsibo, Nyagatare, Huye, Nyanza and Gisagara) reduced malaria incidence from 582 per 1000 in 2016 to 169 per 1000 in 2019

Figure 9: Trends in Malaria Incidence in 7 IRS Districts, Rwanda, 2016-2019



B. MALARIA DIAGNOSIS AND TREATMENT

With the expansion of Home-based Management of malaria (HBM) to all ages and free malaria diagnosis and treatment to the most economically vulnerable populations (Ubudehe 1 and 2) from End 2016, CHWs are effectively providing early diagnosis and treatment.

This shift led to the increased proportion of malaria cases managed by CHWs from 13% in 2015/2016 to 57% in 2018/2019 (Figure 10). As a result, there was a significant 61% reduction in severe malaria cases from 17,941 (2015/16) to 7,035 (2018/19) during the same period and a 62% reduction in malaria deaths from 698 in 2016/17 to 264 in 2018/2019 (Figure 11).

Figure 10: Proportion of Malaria Treated at Community Level (2014-2019)

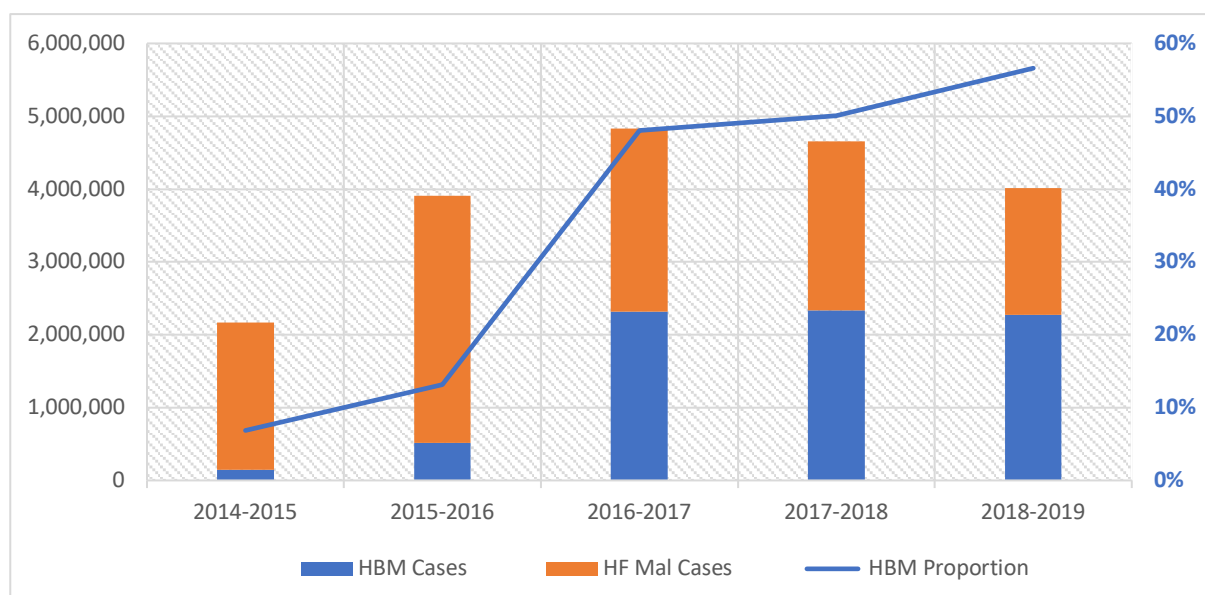
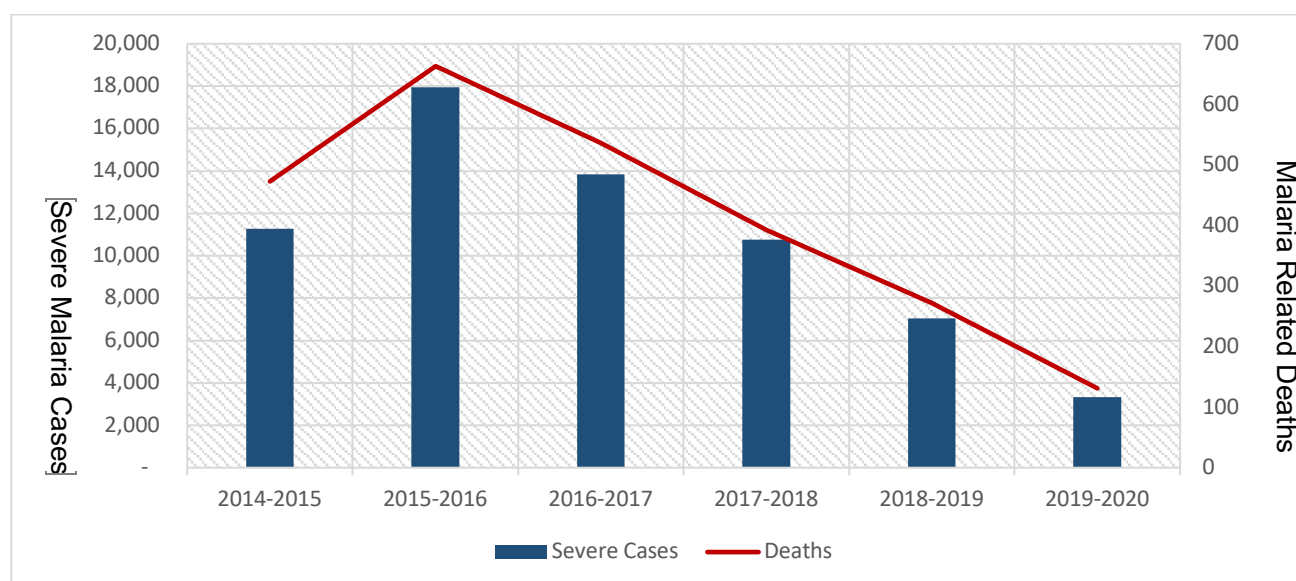


Figure 11: Severe Malaria Cases and Deaths from 2014- February 2020



C. SURVEILLANCE, M&E AND OPERATIONAL RESEARCH (SMEOR)

There is a well-functioning Health information management system which includes HMIS, RapidSMS, eLMIS and, SISCom. The completion and timeliness of reporting rates are high from public health facilities at 98% however, reporting rates from private health facilities remain lower at 50%. Data analysis at the decentralized level is low and it led to some evitable inconsistencies in terms of malaria reported cases compared to reported diagnosed cases and drug consumption. Utilization of data for decision making at this level is also low.

The country lacks an epidemic preparedness and response (EPR) policy and guidelines for malaria. There was limited coordination in the monitoring and evaluation activities of the programme at the district level. Although during the review period research studies including therapeutic efficacy studies were conducted, there was no guiding malaria specific research agenda.

D. PROGRAMME MANAGEMENT

MOPDD operates within an environment of strong political will and committed funding for malaria control and elimination by the Government of Rwanda and partners. Oversight and guidance of the malaria program is provided by the MOH and RBC leadership, with the malaria program as a mainstream program in the RBC structure. The programme has skilled and committed human resources, and development partners are engaged to assist with technical aspects of the program delivery. However, there is an inadequate number of entomologists and epidemiologists to support. There is inadequate funding to fully implement some activities. TWGs meet only intermittently on ad hoc basis and thus function at a sub-optimal level. The bulk of malaria case management is now delivered at the community level through volunteer community health workers (57% of malaria cases). This increase in workload for volunteer CHWs creates a risk for reduced retention in the service. There is no formalized structure for ongoing collaboration with intersectoral stakeholders and, there is need to strengthen coordination in implementing planned cross-border activities with neighboring countries.

E. FINANCING OF THE RWANDA MALARIA PROGRAM

The national Government allocation to the health sector increased over the period under review from 8.2% in 2015-2016 to 15% in 2017/18 in line with the Abuja target of 15%. A slight decrease to 14% was observed in the period 2018/19. The malaria program in Rwanda is primarily financed by the Government of Rwanda (GOR), the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFTAM) and PMI.

Overall there was inadequate funding to enable full program implementation during the period under review, with only 62% of planned program activities fully implemented.

It was noted that the MSP 2013-2020 was underestimated (not capturing all actual needs such as program management, actual IRS needs). Furthermore, in 2016-17 the program experienced a high funding gap of 26%, following the significant increase in malaria cases just after the development of the Extended Malaria Strategic Plan 2016-2020 leading to new additional needs (in the Revised Malaria Contingency Plan 2017-2020).

During the Program Review period, inadequate availability of dedicated funds to implement and sustain IRS in high burden districts in the first two years of the Extended MSP 2016-2020 was noted.

In the FY2017/2018, following the up-rise in malaria cases in 2016, an additional 13.6 million USD was mobilized from GF PAAR and a donation of IRS Product (Actellic) from Madagascar by GF was received to strengthen IRS activities in Rwanda. Therefore, from the end of the FY2017/2018 and the the whole FY2018-2019 the available funds appeared to slightly surpass the planned budget due to this additional funding implemented in FY2018/2019 .

3. WAY FORWARD

Based on the extensive program review the following recommendations were submitted by the external and internal review teams:

a. Malaria Programme Financing

- Increased and sustainable financing is needed to move the country towards achieving malaria morbidity and mortality reduction targets.
- Establishment of a strong surveillance system is essential.
- Advocate for establishment of sustainable and innovative financial resource mobilization mechanism to implement MSP interventions at full scale.

b. Vector Control

- Mobilize more funds (local and external). To increase and sustain coverage with effective vector control interventions requires significant financial resources from both internal and external sources, there is a need to tap on domestic resources, especially from the private sector, and to establish malaria funds for malaria control broadly, and specifically for vector control (prevention). Linking resource mobilization with the Zero Malaria Starts with Me approach is also recommended.
- There is a need to ensure that procurement and implementation of vector control interventions are synchronized and aligned to achieve the greatest impact on malaria transmission. This is not only the responsibility of the NMCP but also of the suppliers of malaria commodities.
- There is a need to use a standardised stratification map of all the malaria risk areas so that vector control interventions – including the use of new tools and approaches are cost effectively deployed where they are most needed.

- Incorporate new and innovative vector control tools beyond LLINs and IRS, such as spatial and personal repellents, into the MSP.

c. Case Management

- Strengthen mechanisms to maintain the competency of health workers in diagnosis and malaria case management through robust refresher training and supportive supervision that includes private sector facilities.
- Review, update and disseminate diagnostic and treatment guidelines to all levels including the private sector facilities.
- Strengthen the capacity of the national health laboratory to support malaria diagnosis QA/QC activities.
- Revise forecasting/quantification of commodities adequately addressing issues of decreasing malaria burden and IRS spraying period.

d. Procurement and Supply Management

- Revise the procurement process of commodities to adequately address the risk of commodity expiration and ensure timely and efficient returns of malaria commodities at risk of expiry to the central level.
- Strengthen training and supervisory visits at all levels to address data inaccuracies and low utilization of the eLMIS.
- Finalize and publish the Coordination Procurement, Distribution System (CPDS) document and quantification SOPs to address issues of lack of funding and delays in disbursements of funds for timely procurement and distribution of commodities.

e. Surveillance, Monitoring, Evaluation and Operation Research (SMEOR)

- Develop malaria surveillance guidelines including an EPR plan in collaboration with the Epidemiological Surveillance and Response division.
- Develop an operational research agenda to inform programming.
- Strengthen the malaria surveillance, monitoring and response at decentralized level through capacity building for data use in decision making
- Appoint malaria Focal Person at district level to ensure and increase effective implementation of malaria program activities at decentralized level
- Initiate dashboards for malaria data at health facilities level for timely provision of information to managers in order to help them to make right decision toward malaria control.
- Reinforce the existing platforms (facility data validation meeting, monthly coordination meeting and quarterly district health management team meeting) for data review, validation, and use for decision making.

f. Advocacy and SBCC

- Advocate for increased funding to support regular and sustained implementation of SBCC activities at all levels;
- Advocate for the provision of a specific budget line in the MOPDD plan to enhance malaria prevention and control interventions;
- Increase participation of CSOs and FBOs specialized in SBCC to enhance continuous implementation of SBCC interventions
- Strengthen human resource capacity for SBCC at all levels
- Produce, distribute adequate SBCC tools and materials with standard messages for use at all levels.

- Launch the ***“Zero Malaria Starts With Me Campaign***
- Strengthen multi-sectoral collaboration in designing and implementing SBCC interventions;
- Increase resource mobilization strategies at local, national and through development partner support to raise funding for SBC interventions ensuring sustainability;
- Continue to use of Monthly Community Work (Umuganda and other community gatherings) to disseminate important messages on malaria prevention and control.
- Strengthen targeted SBCC to increase knowledge on malaria and improve uptake of interventions.
- Include additional outcome indicators and targets in the new MSP on correct knowledge and use of malaria prevention and control interventions:
 - Proportion of targeted population utilizing correct malaria prevention and control interventions
 - Proportion of people in the targeted population reached through SBCC
- Re-define symptoms one should know to qualify as knowledgeable of the symptoms of malaria—consider composite indicator to measure knowledge of malaria symptoms.
- Conduct regular operational research and population-based studies particularly the KAP surveys which will include the knowledge on malaria of the general population

g. Program Management

- The MOPDD should strengthen annual review and planning meetings to deliberate and document progress made and outline priorities and milestones for the following year, this will help to critically review all factors that lead to under-achievement of strategy implementation across all objectives.
- Coordination and collaboration of RBC division and units and relevant partners should be enhanced through TWGs.
- MoH to continue to support and coordinate East African Community efforts to develop the structures and operationalization of the Great Lakes cross border malaria initiative.
- Expand the sources of financing for malaria including private sector and sustainable domestic funding to ensure increased coverage with interventions such as IRS and full implementation of strategic plan activities.
- Expand the performance based financing (PBF) to community health workers providing malaria case management services.
- MoH to designate a focal point person for SBCC to coordinate activities and actions with all stakeholders including the health promotion unit on malaria messaging for impact.
- For sustainability, the Ministry of Health should consider partnering to promote cooperatives beyond health services as a business model for retention of health workers at both health facility and community level.

CHAPTER 5: MALARIA STRATEGIC PLAN 2020-2024

The 2020-2024 Rwanda Malaria Strategic plan was developed under the guidance of recommendations from the MPR of the Extended MSP (2013-2020) conducted in October- November 2019.

1. VISION

Rwanda free from malaria as a way to contribute to the socio economic development.

2. MISSION

The mission for the program is to contribute towards the social- economic development of Rwanda through malaria control by strengthening and implementing appropriate interventions and quality health delivery services in partnership with stakeholders.

3. GUIDING PRINCIPLES

- a) **Person-centered:** It will be ensured that, the experiences of populations in need of services actively inform the design and delivery of malaria interventions. The malaria prevention and treatment will be structured and implemented taking into consideration the communities' values, social circumstances, including decisions about community versus facility-based deployment and the dynamic of interactions between service provider and client.
- b) **Equity and Accessibility:** Provision of quality and equitable services will be emphasized, ensuring that vector control, diagnosis and treatment services reach all populations at risk of malaria, taking into consideration the hardship that certain populations may face in accessing services and vulnerabilities faced by others (including children under the age of five years, pregnant women, people living with HIV/AIDs, internally displaced populations-IDPs, refugees, special forces, prisoners, migrants etc).
- c) **Quality:** Provision of quality services will be emphasized. Quality assurance (QA) measures are in place and will ensure implementation is in line with the defined national and international standards and norms. Where required accreditation will be obtained.
- d) **Ownership, leadership and political will:** The Government will lead the implementation of malaria interventions and will be at the forefront of promoting a sense of stewardship, accountability and transparency;
- e) **Evidence-based interventions:** All malaria control interventions and strategies will be evidence based, derived from research findings at international and country level. Their impact will be regularly monitored and evaluated;
- f) **Integration:** Malaria prevention and control will not only be addressed by the health sector as a health issue but, multi-sectorally, as a developmental, economic, political, environmental, agricultural, educational, biological, legal, security and social issue.

4. GOAL

By 2024, reduce malaria morbidity and mortality by at least 50% of the 2019 levels.

5. STRATEGIC OBJECTIVES

The following objectives will lead to achievement of the goal:

1. By 2024, at least 85% of population at risk will be effectively protected with preventive interventions;
2. All suspected malaria cases are promptly tested and treated in line with the national guidelines;
3. By 2024, strengthen surveillance and reporting in order to provide complete, timely and accurate information for appropriate decision making at all levels;
4. Strengthen coordination, collaboration, procurement & supply management and effective program management at all levels;
5. By 2024, 85% of the population at risk will have correct and consistent practices and behaviors towards malaria control interventions.

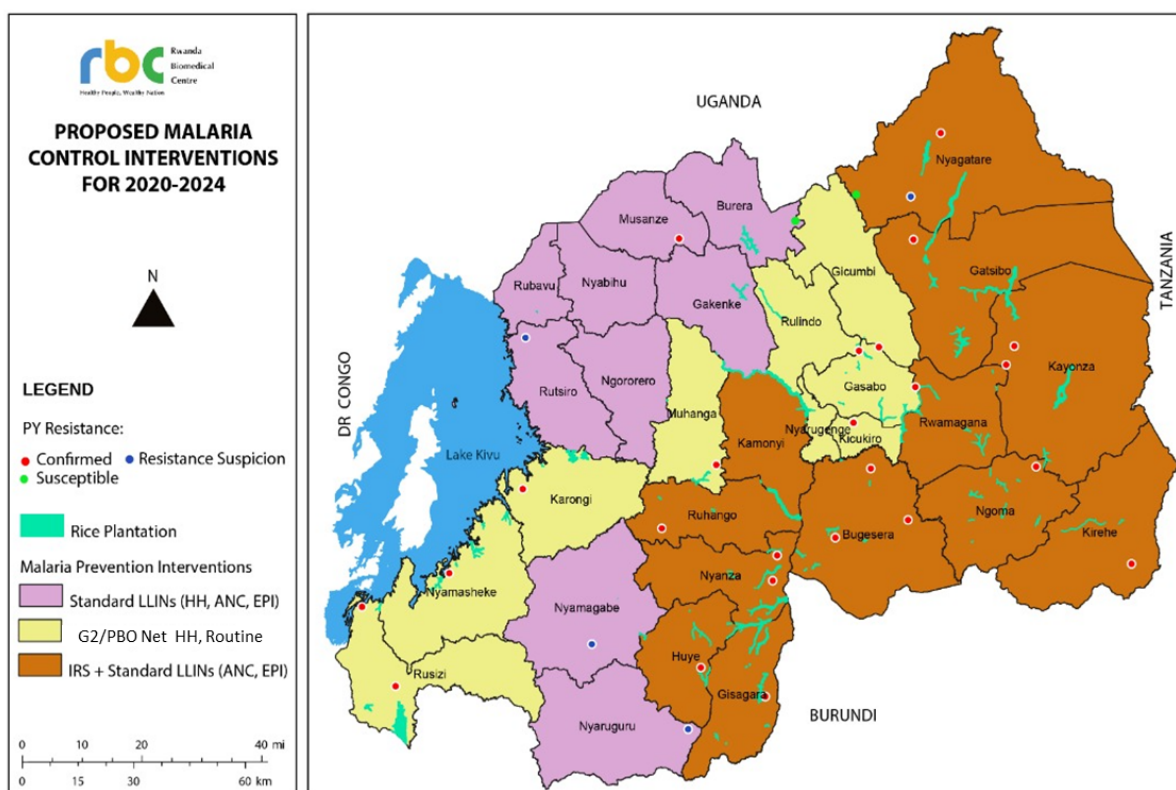
6. STRATEGIC INTERVENTIONS

Objective 1: By 2024, at least 85% of population will be effectively protected with malaria preventive interventions

- IRS**
- Blanket IRS coverage in 12 targeted high malaria endemic districts
 - Use effective insecticides and sustain effectiveness throughout the transmission period
 - Implement IRS in specific settings including refugee camps, security/military barracks, prisons, boarding schools, hotels, health facilities, etc.
 - Focal IRS will also be conducted in response to malaria epidemics and outbreaks
 - Build Capacity for IRS implementation and monitoring
- LLINs**
- Continue distribution of effective LLINs through mass campaigns and routine distribution through EPI and ANC
 - Ensure timely procurement and distribution of LLINs
 - Support distribution of LLINs in the private sector through social mobilization
- Larval Source Management**
- Larviciding
 - Implementation of new and innovative vector control tools including insecticide wall paints, spatial and personal repellents guided by stratification mapping and standardized criteria
 - Community level modification of human habitations and behaviors and environmental manipulation
 - Multisectoral collaboration towards mitigation of creating/sustaining larval habitats

Table 2: Rwanda Malaria Stratification and Prevention Interventions Deployment					
Epidemiological Strata by 2016	District	Resistance to Pyrethroids	Mosquito Breeding Sites	Current Prevention Intervention by 2020	Proposed Interventions
High Endemic API >450	Huye	Yes	Yes	IRS+ Standard LLINs	IRS
	Ngoma	Yes	Yes	IRS+ Standard LLINs	IRS
	Kayanza	Yes	Yes	IRS+ Standard LLINs	IRS
	Rwamagana	Yes	Yes	IRS+ Standard LLINs	IRS
	Nyanza	Yes	Yes	IRS+ Standard LLINs	IRS
	Ruhango	Yes	Yes	IRS+ Standard LLINs	IRS
	Nyamasheke	Yes	Yes	IG2 Nets	IG2 Nets+ LSM
	Kamonyi	Yes	Yes	IRS+ Standard LLINs	IRS+ LSM
	Gisagara	Yes	Yes	IRS+ Standard LLINs	IRS
	Gatsibo	Yes	Yes	IRS+ Standard LLINs	IRS
Bugesera	Yes	Yes	IRS+ Standard LLINs	IRS	
Moderate API 250-<450	Muhanga	Yes	Yes	IG2 Nets	IG2 Nets
	Nyaruguru	Yes	Yes	Standard LLINs	Standard LLINs
	Karongi	Yes	Yes	IG2 Nets	IG2 Nets
	Rusizi	Yes	Yes	IG2 Nets+Targeted IRS	IG2 Nets+ LSM
	Nyamagabe	Yes	Yes	Standard LLINs	Standard LLINs
	Nyagatare	Yes	Yes	IRS+ Standard LLINs	IRS
	Gasabo	Yes	Yes	PBO Nets	IG2 Nets+ LSM
	Rulindo	Yes	Yes	PBO Nets	IG2 Nets
Low Endemic API 100-<250	Rutsiro	No	No	Standard LLINs	Standard LLINs
	Kicukiro	Yes	Yes	PBO Nets	IG2 Nets+ LSM
	Nyarugenge	Yes	Yes	PBO Nets	IG2 Nets+ LSM
	Kirehe	Yes	Yes	IRS+ Standard LLINs	IRS
	Gicumbi	Yes	Yes	PBO Nets	IG2 Nets
	Rubavu	Yes	Yes	Standard LLINs	Standard LLINs
	Ngororero	Yes	Yes	Standard LLINs	Standard LLINs
	Gakenke	No	No	Standard LLINs	Standard LLINs
Very Low Endemic API <100	Musanze	Yes	Yes	Standard LLINs	Standard LLINs
	Burera	No	Yes	Standard LLINs	Standard LLINs
	Nyabihu	Yes	Yes	Standard LLINs	Standard LLINs

Figure 12: Rwanda Malaria Control Interventions Deployment for 2020-2024



Vector control is the primary component of malaria control and prevention in Rwanda. It remains one of the key Malaria & OPDD responses to consolidate the gains in malaria control and drive down the transmission. A strong integrated vector management approach based on its five pillars (capacity building, evidence based, collaboration, social mobilization and awareness, and integration) will be implemented through this 4 year strategic plan. The effectiveness of vector control tools that are deployed will be safeguarded against the rising threat of insecticide resistance and behavior changes in malaria vectors with a focus on cost - effectiveness. Indoor Residual Spraying (IRS), Long Lasting Insecticide Treated Nets (LLINs) and Larval Source Management (LSM), and innovative integrated vector control tools will be deployed according to the country’s epidemiological and risk stratification zones.

STRATEGY 1.1. SUSTAIN AND EXPAND IRS IN HIGH MALARIA INCIDENCE DISTRICTS

Recognizing that Indoor Residual Spraying (IRS) contributes to a greater reduction in malaria incidence in areas of intense malaria transmission⁴ and with an aim to optimize the impact with existing interventions, MOPDD will implement one round of blanket IRS in 12 high malaria endemic districts every year. The goal of this strategy is to attain and sustain operational IRS coverage of 98% in all targeted districts in a timely manner, in line with the transmission seasons. To mitigate the reported vector resistance to insecticides, WHOPEs approved insecticides will be used in rotation as per Rwanda’s national Insecticide Resistance Management Plan (IRM), 2019-2024. IRS will be implemented in specific appropriate public settings such as refugee camps, security/military barracks, prisons, boarding schools, hotels, health facilities etc. where identified as a need. The program will provide

⁴Global Technical strategy for malaria 2016-2030

technical support towards the implementation of IRS in the identified institutions. Focal IRS will also be conducted in response to malaria epidemics and outbreaks.

Capacity building for IRS implementation and monitoring will be carried out in all the districts eligible for IRS and future local management of potential residual foci in targeted areas of moderate and low malaria transmission. This will include supporting the development of district micro plans, conducting training of trainers (TOT) for management teams, training of IRS personnel to implement IRS activities, monitoring and evaluation of the IRS activities, and training health workers to manage insecticide adverse events. Capacity building in vector control and entomology surveillance will be conducted through training of entomologists and enhancement of existing infrastructures and equipment.

STRATEGY 1.2: SUSTAIN UNIVERSAL ACCESS TO LLINS

Universal coverage of LLINs will be maintained across the country through mass distribution campaigns, routine distribution (EPI and ANC) and to special groups (prisoners, refugees, schools, etc.). For efficiency and value for money, and following the ongoing mass distribution of LLINs in February to March 2020, the next LLINs distribution will be organized in 2022 consisting of mass campaign and routine distribution in all 18 Non-IRS districts and Routine distribution in all 12 IRS Districts. To maintain the ownership achieved, LLINs, will be procured and distributed in all districts through a mass campaign, continuous ANC and EPI distribution channels from 2020-2024 and private providers.

The mass distribution campaigns will be undertaken in line with WHO guidance based on one LLIN for every two persons in categories 1-3 of the population⁵.

New generation nets (Interceptor® G2 or PBO Nets) will be distributed in 9 high burden districts not receiving IRS (Rusizi, Nyamasheke, Karongi, Muhanga, Rulindo, Gicumbi, Kicukiro, Gasabo and Nyarugenge) while the remaining 9 low endemic districts will receive Standard LLINs.

In IRS districts the distribution of standard pyrethroid LLINs will be maintained only for routine distribution (EPI, ANC). Sustaining universal coverage will be further enhanced through public-private-partnerships using a social marketing approach.

Noting that currently the country is piloting IG2 Nets and PBO Nets in targeted districts, results will guide the review of the this NSP for adjustment before the next procurement.

STRATEGY 1.3: INTRODUCTION OF INNOVATIVE INTEGRATED VECTOR CONTROL TOOLS

While IRs and LLINs will remain the core malaria vector control interventions during this MSP period, innovative integrated vector control strategies will be piloted/introduced on a small scale in exclusive areas to supplement the management of insecticide resistance, to address the observed behavior changes of mosquito vectors in Rwanda (Annual program report 2018/19) and, to advance interruption of transmission. The implementation of new and innovative vector control tools beyond LLINs and IRS, such as larviciding, insecticide wall paints, spatial and personal repellents will be guided by the stratification map and set standardized criteria.

Under the framework of integrated vector management and in collaboration with other stakeholders, the country intends to promote *larval source management* using bio-control of mosquito larvae, *insecticide wall paints* and, spatial and personal protection *repellents*.

⁵ All within category 1-3 will receive LLINs. Category 4 will procure available LLINs at Health centres (<1% of population).

The bio-control of mosquito larvae will be implemented using the larvivorous fish (*Clarias* spp, *Tilapia* spp and *Carpe* Spp) in selected rain water dams and water channels in collaboration with the Ministry of Agriculture and Animal resources (MINAGRI), the Rwanda Agricultural Board and the fishing cooperatives. Bio-larvicides will also be used in targeted breeding sites which are few, fixed and findable as recommended by WHO guidelines, such as rice paddies, mining pits, vegetable weltering pits and, inter-crop drains. Despite the high coverage and usage of both ITNs/LLINs and IRS, there are currently evidences that the core vector control interventions are not able to interrupt malaria transmission (less than one infective bite per year) in tropical regions. It was shown that the residual malaria transmission mainly occurs in areas where malaria vectors acquired resistance to existing insecticides or developed behaviors such as outdoor resting, earlier and outdoor biting, host preferences to domestic animals and avoiding the contact with treated materials with insecticide. Similarly, also human behaviors contribute to the residual transmission by living in or frequent visits to forest or farming areas, sleeping away from protected houses or spending a major part of the night outdoors without any protective measures (WHO, 2014a). The above factors have been reported in Rwanda through entomology surveys. In addition and following the scale up of indoor residual spraying, it was reported the shift of mosquito species with the selection of the known opportunistic malaria vector species, *Anopheles arabiensis* and also the emergence of secondary malaria vectors in term of density and infection with *Plasmodium* parasite. The above factors justify the needs of introduction of innovative new vector control interventions or technology with the aim to address the above mentioned challenges and achieve interruption of transmission.

To enhance the impact on larval and adult stages of mosquitoes by the existing hand application of larvicides and to improve coverage, an innovation of Bti application using drones will be piloted in targeted areas.

Insecticide wall paints will be promoted in collaboration with the private sector mainly targeting hotels, boarding schools, health facilities, military barracks, prisons, private houses and newly constructed model villages.

Spatial and personal repellents will also be promoted through social marketing in collaboration with public and private operators in the areas of manufacturing, procurement and distribution. Community based organization and specifically Community Health Workers will be supported in initiatives such as planting of potent mosquito repellent plants, the extraction of essential oils and locally manufacturing mosquito repellents. The primary places for their distribution to the end users of mosquito repellents will be the community health workers and pharmacies. Other innovative technologies and tools will be experimented through operational research to generate local evidence before they are scaled up.

STRATEGY 1.4: COMMUNITY BASED ENVIRONMENT MANAGEMENT

The community based mosquito larval control will contribute to the abatement of mosquito density and thus the entomological inoculation rate. This strategy will enhance the impact of core malaria vector control interventions.

The program will conduct environmental management through *environmental modification*, *environmental manipulation*, and *modification of human habitations and behaviors*.

The program will build capacity at district level in larval source management by environment management through conducting TOTs for district staff. Cascade trainings of targeted implementers of larval source management (EM) at community level will then be conducted. The training will include *environmental modification* such as drainage, land leveling, and filling small ponds or water-collecting depressions with soil and *modification of human habitations and behaviors*. Training on *environmental manipulation* methods including flushing streams or canals, practices of intermittent irrigation in agricultural fields, flooding or temporarily dewatering of swamps or man-made standing water will also be included.

In collaboration with the Ministry of Agriculture, intermittent irrigation (rotation of wet and dry irrigation systems) will be introduced in rice-growing fields so as to prevent the mosquito larvae complete their development cycle.

The control of resting sites of mosquitoes by removing peri-domestic vegetation and stagnant water will be implemented in collaboration with community.

The implementation of this strategy will involve the prior engagement of community based organizations, community health workers, the local leaders of villages, and other targeted groups such as cooperative of rice farmers, miners, schools, health facilities, security forces and others. The empowerment of the above groups will be undertaken through cascade trainings combining both theoretical and practical training on mosquito larvae identification and control.

The districts will establish action plans for implementation through monthly community works in the last week of every month or during other selected community events. A routine reporting template on the implemented actions will be developed, to ensure monitoring in collaboration with other stakeholders.

Follow up meetings and supervision on the implementation of community based larval source management will also be conducted by the district.

Objective 2: Maintain 100% prompt testing and treatment of all suspected malaria cases in line with national treatment guidelines

- Ensure availability of malaria commodities for diagnosis and treatment at all levels of the health facility and in the community
- Ensure universal access to malaria diagnosis and treatment services including the most vulnerable and high risk populations
- Ensure that all suspected malaria cases are tested at all health facility levels and, in the community, using appropriate, quality assured diagnostics (RDTs and/or microscopy)
- Ensure that all confirmed uncomplicated and severe malaria cases are effectively managed in a timely manner with correct treatment

Prompt diagnosis and effective treatment of malaria remain a primary component of malaria control in Rwanda and will be achieved with implementation of the following strategies:

STRATEGY 2.1: STRENGTHEN THE QUALITY OF MALARIA DIAGNOSIS AT ALL LEVELS INCLUDING THE PRIVATE SECTOR

This strategy aims to ensure that all suspected malaria cases are tested at all health facility levels in both public and private sectors, and in the community using appropriate, quality assured diagnostics (RDTs and/or microscopy). The program will conduct training of lab technicians (at all levels) in advanced microscopy testing and in RDT testing for CHWs. Supportive supervision will also be conducted to strengthen malaria diagnostic capacity.

To ensure the availability of diagnostic commodities at all times, and at all levels, MOPDD in collaboration with MPPD will conduct annual quantification meetings and ensure timely procurement and distribution of commodities. External competency assessment for Malaria microscopy will also be conducted, in addition to malaria molecular diagnosis (malaria PCR) at the NRL. MOPDD will also procure commodities for malaria molecular diagnosis (Malaria PCR) at NRL.

STRATEGY 2.2: STRENGTHEN PROMPT AND CORRECT TREATMENT OF SIMPLE (UNCOMPLICATED) MALARIA AT ALL LEVELS INCLUDING THE PRIVATE SECTOR

The fourth edition of the national Malaria guidelines on malaria case management (with the inclusion of ACTs as second line treatment for malaria) is under finalization. Once user friendly formats are published and distributed to all levels, MOPDD will conduct cascade training of CHWs, and health workers at HPs, HCs, DHs, provincial, Referral Hospitals and District Pharmacies on malaria case management in line with the guidelines. Updated standard operating procedures, job aids and treatment algorithms will be produced, disseminated to all health facilities and provided to health workers during training and support supervision visits. Annual workshops on updated malaria case management guidelines for final medical (interns and residents) and nursing will be also conducted.

In line with malaria diagnosis and treatment policies, the district hospitals will monitor the availability of malaria commodities and the quality of treatment practices in the facilities under their catchment areas. Mentorship and supportive supervision on malaria case management and supply chain management will be provided to health workers at all levels. Smartphones for CHWs will be procured and distributed to CHWs to enhance malaria case notification and stock out notification.

The malaria program will procure and ensure availability of reporting tools (registers, algorithms, stock cards and code cards) for CHWs.

The national malaria program will maintain quarterly internal and external assessment of malaria case management. The RBC will also undertake external quality assessment to evaluate the quality of integrated management of childhood illnesses annually and, through existing channels such DQA /ISS continue to provide technical input.

STRATEGY 2.3: STRENGTHEN REFERRAL AND MANAGEMENT OF SEVERE MALARIA CASES AT HEALTH FACILITY LEVEL

To ensure the appropriate diagnosis, referral and treatment of severe malaria refresher training of healthcare providers in the community (CHWs), at health centres, and hospitals will be conducted. Weekly data verification of severe malaria cases and malaria deaths will also be done. Quarterly QC and DQA on severe malaria diagnosis in the public and private sector will provide guidance for routine support supervision and mentorship of health workers. During supportive supervision onsite training on the management of severe malaria will be conducted in addition to auditing patient files on severe malaria case management. The notification of all severe malaria cases initiated in 2018 will be maintained.

STRATEGY 2.4: STRENGTHEN MECHANISMS TO MAINTAIN COMPETENCY OF HEALTH WORKERS IN MALARIA CASE MANAGEMENT AT ALL LEVELS INCLUDING PRIVATE SECTOR

In order to maintain the competency of health workers in malaria case management, the NMCP will ensure that they are all regularly updated on malaria case management through refresher trainings and supportive supervision.

In addition, annual training of lab technicians on QA/QC and accreditation (WHO guidance) will be conducted.

STRATEGY 2.5: ENSURE QUANTIFICATION AND DISTRIBUTION OF QUALITY ASSURED MALARIA COMMODITIES

The NMCP, through CPDS /MoH will undertake annual quantification of malaria commodities in the private and public sector and monitor the distribution of commodities at DP, HF and the community.

Bi-annual quantification reviews to assess the use of procured commodities as forecasted will be conducted alongside quarterly monitoring of stockouts.

Bi-annual meetings with district pharmacies, health facilities and the community will also be conducted to enhance continuous monitoring of the distribution and stockouts of malaria commodities and will include sharing best practices and identifying solutions for gaps in the malaria supply chain management.

In addition, QC of antimalaria drugs and RDTs will be done, annually to ensure that drugs and tests used in country maintain their quality along the supply chain from their point of arrival to the end user point.

STRATEGY 2.6. STRENGTHEN EARLY DETECTION AND TREATMENT IN PREGNANT WOMEN

Under this strategy, the NMCP will update, validate and disseminate the guidelines and job aids on malaria prevention and treatment in pregnancy. Integrated malaria training of health workers will include messages on prevention of malaria in pregnancy. The program will also produce and disseminate integrated data collection tools for MiP, procure and distribute LLINs and engaging communities on antenatal care attendance in collaboration with local leaders and CHWs.

Objective 3: By 2024, Strengthen Surveillance and Reporting for Complete and Timely Accurate Information for Appropriate Decision Making at all Levels

- Develop malaria surveillance/epidemic preparedness and response guidelines
- Establish early warning, early detection and response systems will be established
- Strengthen capacity in data quality, analysis and use at all levels through training and supportive supervision of appropriate staff
- Continue routine malaria surveillance through routine reporting systems at the health facility and community levels (DHIS2 and SISCOM)
- Evaluate impact of implementation through surveys and evaluations

The establishment of a robust malaria surveillance and reporting system through strengthening routine HMIS and SISCOM reporting systems, improving monitoring and evaluation of the program implementation and promoting the generation and use of evidence to inform malaria programming is essential for the success of this strategic plan. Inclusion of the private sector will also be key. The following strategies are aimed to achieving this objective.

STRATEGY 3.1: STRENGTHEN MALARIA ROUTINE SURVEILLANCE AND EPIDEMIC PREPAREDNESS AND RESPONSE (EPR) AT ALL LEVELS

In collaboration with the Epidemiological Surveillance and Response division the programme will develop malaria surveillance/epidemic preparedness and response guidelines which, will provide outbreak thresholds

for the epidemic prone districts. Early warning, early detection and response systems will be established, SOPs developed and disseminated to assist in identification, notification and timely response to outbreaks. Capacity for EPR will be built at all levels and data will be used to inform potential or existing outbreaks.

STRATEGY 3.2: STRENGTHEN CAPACITY BUILDING IN DATA QUALITY, ANALYSIS AND USE AT ALL LEVELS

The program will support training and support supervision of data managers and M&E officers at public and private health facilities on the collection of routine health data, data cleaning, analysis, validation, reporting and the use of data for decision making. The capacity at health facility level to manage the health information systems and, address health information gaps and issues will also be enhanced.

STRATEGY 3.3: CONDUCT REGULAR MALARIA SURVEYS AND EVALUATIONS

Data collection, collation and transmission through the routine health information system, will be used to monitor malaria indicators related to malaria cases and deaths and accessed through the DHIS2. There will be regular meetings within the SMEOR TWG to develop a grid of core indicators for regular monitoring of malaria status across the country.

Malaria program performance in line with outcomes and impact will be evaluated using periodic surveys and studies. Population based surveys including MIS and DHS will be conducted in 2022 and 2024 respectively. Other evaluations will include surveys on malaria prevalence, ownership and use of LLINs, drug resistance, insecticide resistance and KAP surveys. The program will also conduct annual health facility (public and private) assessments on the quality of malaria care and iCCM evaluations.

STRATEGY 3.4: STRENGTHEN SEVERE MALARIA NOTIFICATION AND MALARIA DEATH AUDITS

Severe malaria cases notification and response as well as death audits will be strengthened through conducting refresher training of healthcare providers at the community (CHWs), health centres, and hospitals) on notification and SMS alerts on severe malaria and on improving the follow-up of the SMS alert system for severe malaria cases. Malaria death audits will also be integrated into the DHIS2 system in order to achieve timely confirmation of malaria deaths.

STRATEGY 3.5: IMPROVE REPORTING FROM THE PRIVATE SECTOR AND SUSTAIN PUBLIC SECTOR REPORTING

The country made good progress in reporting of private clinics into HMIS database but the performance in terms of completeness and timeliness achieved is still around 50%. This strategy will help to increase reporting rates, completeness and timeliness of private health facilities by providing the health providers and data managers in private health facilities training in data management, data quality, analysis and information use. MOPPD will conduct regular supportive supervisor, mentorship and DQA to ensure all health facilities (public and private) submit complete and timely monthly reports. To further support this, HMIS will update the list of active private health facilities in DHS2 on an annual basis. The district hospital and district health unit will also integrate private health facilities in quarterly data review meetings, regular DQA and DHMT meetings.

STRATEGY 3.6: DEVELOP AND IMPLEMENT AN OPERATIONAL RESEARCH AGENDA FOR MALARIA

The program will annually develop an operational research agenda for malaria and this will be implemented in collaboration with national and international academic/research institutions and partners. This research will be aimed towards generating evidence to inform policies, interventions and programmatic decisions. The program will also provide a forum for research results dissemination/sharing.

Objective 4: By 2024, Strengthen Coordination, Collaboration, PSM and Effective Program Management

- Develop and strength collaborative and partnership initiatives
- Stakeholder engagement and coordination strengthened through functional TWGs
- Mobilization of adequate and sustained financial resources required for implementation of this strategic plan (2020-2024)
- Ensure efficient and cost-effective utilization of resources
- Ensure full implementation of malaria strategies and activities as outline in the MSP 2020-2024
- Provide Salaries and PBF for RBC and District Level Staff
- Provide PBF/Incentives for CHWs

The focus of the program in this plan is to maintain the achievements so far and move forward to further reduce the burden of malaria. The program will focus on developing and strengthening collaborative and partnership initiatives so as to accelerate malaria prevention and control in Rwanda. The program will also focus on mobilization of adequate financial resources through sustainable means, to ensure efficient and cost-effective utilization of such resources for implementation of malaria strategies.

STRATEGY 4.1: MOBILIZATION OF ADEQUATE FINANCIAL RESOURCES

MOPDD will produce a costed investment case for maintaining and increasing government and external resources for malaria interventions as well as target and attract new source of funds including private sector for malaria control in Rwanda. Under this strategy, funding proposals to national and international funding mechanisms/agencies will be prepared.

STRATEGY 4.2: STRENGTHEN THE INTRA- AND INTER- SECTOR COLLABORATION AND COORDINATION FOR MALARIA CONTROL AT ALL LEVELS

This strategy will focus on establishing the “End Malaria Council and Fund” at country level. End Malaria councils are designed to assist countries in increasing resource mobilization to achieve and sustain malaria elimination. Under this strategy, the program will strengthen multi-sectoral platforms gathering different Ministries,

institutions and stakeholders that play a role in fight against malaria such as MINAGRI, MINALOC, MINIRENA, MINEDUC etc.

The program will also revitalize the malaria technical working groups and provide technical support to existing decentralized level platforms such as DHMTs and coordination meetings for malaria control.

STRATEGY 4.3: SYNCHRONIZATION AND ALIGNMENT OF MALARIA COMMODITIES PROCUREMENT AND SUPPLY MANAGEMENT

This strategy will put an emphasis on the development of comprehensive malaria commodities need assessments and timely implementation procurement plans to avoid stock outs, expiries or delays in implementation of key malaria interventions such as IRS or LLINs mass distributions. Conducting regular data and supply chain review meetings, enhancing data use through triangulation between HMIS and eLMIS will build a strong and efficient malaria procurement and supply chain management. The program will also strengthen pharmacovigilance system for malaria commodities from public and private health facilities

STRATEGY 4.4: STRENGTHEN REGIONAL COLLABORATION

The Great lakes malaria initiative meeting which involved the East African Community members and the Democratic Republic of Congo, took place in Kigali, in April 2019, launching cross border activities in Rwanda. The focus of this strategy will contribute to the validation and the operationalization of the developed Great lakes malaria Regional strategy and the development of the collaboration framework.

STRATEGY 4.5: STRENGTHEN HUMAN RESOURCES AND MATERIAL CAPACITY OF THE MALARIA PROGRAMME

The Malaria program will continue to ensure the availability of sufficient staff and strengthen their capacity to better manage malaria activities with a special focus on strengthening human resource capacity of the vector control and epidemiology units. The program will expand the performance based financing (PBF) to community health workers providing malaria case management services in addition to providing salaries and PBF for RBC and district level staff

The program will avail equipment for routine activities and effective running of the program. The program will ensure that staff participate in key international meetings and conferences to learn and share best practices.

STRATEGY 4.6: CONDUCT COORDINATION AND PLANNING SESSIONS FOR THE MALARIA PROGRAM AND KEY STAKEHOLDERS

The program will organize regular planning meetings, review meetings as well as development of annual work plans according to the Ministry of Health requirements. This strategy will help the program in coordination of partner's activities to avoid duplication, to ensure harmonization of activities and optimal use of resources. The program will ensure Malaria program reviews at mid-term and at the end of the implementation of the Malaria strategic plan.

Objective 5: By 2024, 85% of the Population Will Have Correct and Consistent Practices and Behaviors towards Malaria Control Interventions

- Provide SBCC interventions on malaria prevention and control to all populations at risk of malaria using strategies defined in the National Malaria Related Strategic Plans
- Ensure adequate financial support for timely and effective implementation of SBCC activities as outlined in the National Malaria Related Strategic Plans.
- Advocate for malaria to remain high on the national agenda and at all levels

In 2017 MOPDD initiated the development of the Rwanda Social and Behaviour Change Communication Strategy for malaria prevention and control (2017-2020) which defines the communication approaches to be used. The malaria program will ensure finalization validation and dissemination of the strategy to guide the implementation of malaria communication interventions during the MSP period 2020-2024. This will ensure all SBCC activities are objective-driven and messages are consistent and harmonized across partners. It will also safeguard that all approaches are evidence based, targeting priority populations and influencing the key factors (or determinants) aimed at ensuring the population have correct practices and behaviors towards malaria prevention and control.

STRATEGY 5.2: INCREASE AWARENESS ON THE COMMUNITIES' ROLE IN MALARIA PREVENTION AND CONTROL

The SBCC unit will develop integrated messages to sensitize communities so as to ensure use of malaria preventive services, early treatment seeking behavior and support of environmental management including larva source management. These messages will be shared with the communities through mass media campaigns, community dialogues, distribution of IEC materials and interpersonal communication with community health workers.

STRATEGY 5.3: INCREASE ADVOCACY FOR HIGH LEVEL SUPPORT TO SUSTAIN MALARIA PREVENTION AND CONTROL INTERVENTIONS

The Mal&OPDD will organize high level advocacy meetings with parliament, socio cluster ministries/policymakers, donors, civil society, faith based organizations and private sector representatives to enhance ownership and seek continued support for malaria prevention and control interventions. This strategy also aims to mobilize stakeholders involved in health care in Rwanda to integrate malaria prevention and control messaging in their health communication interventions.

MOPDD will also collaborate with the Rwanda Broadcasting Agency (RBA) who will provide support in malaria advocacy at the national level through radio and/or TV talk shows.

Advocacy will be increased to not only maintain malaria high on the national agenda but also to increase malaria funding and support from development partners, private sector, civil society organizations especially in malaria SBCC and community mobilization.

STRATEGY 5.4: PROMOTE COMMUNITY ENGAGEMENT IN MALARIA PREVENTION AND CONTROL INTERVENTIONS

The malaria program will collaborate with the SBCC unit to engage communities to actively participate in malaria prevention and control through existing structures such as parent forums, monthly and weekly community meetings. SBCC activities will be implemented in partnership and collaboration with NGO's, FBOs and CBOs implementing at the community level.

Explore the use of school based malaria diagnosis and treatment through School Health Program (SHP) implemented by the Ministry of Education (MINEDUC), the Ministry of Health (MOH) and Partners, educational and participatory malaria prevention and control programs will be scaled up in schools. This will include providing information, education and communication materials aimed at increasing students and teachers' awareness, knowledge and stimulating demand for malaria prevention and treatment as well as establishing malaria school clubs. It will also include training of teachers to screen and treat malaria at school.

Leaders from faith based organizations will be engaged to actively participate in health promotion of malaria prevention and control interventions. Religious leaders will also serve a crucial role in promoting malaria prevention messages and health clubs within the churches will be established and maintained to enhance the health promotion among church members especially on malaria prevention and control.

MOPDD will also engage with Agriculture Cooperatives namely rice cooperatives to raise awareness on their contribution to increase in mosquito breeding and their role in malaria prevention through larval source management e.g. through fish farming.

To further enhance community engagement and mobilize resources, the "*Zero malaria starts with me*" campaign will be initiated, and it will include sport competitions conducted within high endemic districts aimed at increasing awareness of malaria. Strategic national and international celebrities will be identified to champion the campaign.

MSP WORK PLAN

The implementation plan of this national malaria strategic plan is detailed in **Annex 2**.

IMPLEMENTATION ARRANGEMENTS

This strategic plan will be implemented at different levels of the health care system including National, District, health facility and community level and through a wide multi-sectoral partnership framework. The plan will be implemented within the established policy, regulatory, institutional and M& E frameworks as outlined below.

a. Overall Management

Oversight leadership and coordination of the malaria program is provided by the MOH and RBC with malaria program being a mainstream unit in the RBC structure.

The local government ensures the provision and management of health services including financial and human resources. It also ensures the coordination, accountability, implementation and management of health activities at decentralized level in order to improve service delivery, greater coverage of health services, improved quality, cost effectiveness and ownership.

Institutions in charge of managing and allocating resources (such as HRH, infrastructure and equipment, medical products) and ensuring quality of service provision (QA, Clinical Services) collaborate regularly with the malaria program to support implementing their respective services. MOPDD also collaborates with other key divisions within RBC, including the following: National Referral Laboratory (NRL) (for malaria diagnostics, QC/QA of diagnostics, microscopy training, and special studies such as therapeutic efficacy studies to monitor for resistance to antimalarial medication); Maternal ,Child and Community Health (for MiP, and delivery of the Community Health package for iCCM); Medical Products Procurement and Distribution Division (MPPD) (for supply chain support including regular quantification of anticipated commodity needs, as well as procurement, distribution and quality control of malaria commodities); Epidemic Surveillance and Response (ESR) division (for disease surveillance and response); Rwanda Health Communication Center (for SBCC activities); Single Projects Implementation Unit (SPIU) and RBC Corporate (for budget planning and support for implementation); Planning Monitoring Evaluation and Business Strategy (PMEBS) (for data systems (HMIS) and planning and monitoring of activities (ISS, DQA)) and; Rwanda Food and Drugs Authority (RFDA) (for product registration, regulation and import).

The overall health planning process is guided by the Planning Department of the MOH in close collaboration with the Planning division in RBC. Specific operational planning for the malaria program is done by MOPDD in line with the planning cycle and HSSP 4 priorities. This strategic has aligned its priorities and interventions to the HSSP4 and annual plans will be developed on the basis of its log frame. District based planning will be done annually in bottom-up fashion in line with set financial budget ceilings as per the defined priorities in the HSSP4 and the Malaria strategic plan. The District Health Unit is responsible for the development of annual district plans by HCs and district hospitals that respond both to the District Development Strategies (DDS) under the responsibility of the vice-mayor, in charge of social affairs, as well as responding to the relevant priorities of the malaria strategic plan and overall priorities of the HSSP4.

Regular meetings between MOH, RBC, MOPDD, other departments and the malaria program through the HSWG and the TWGs provide all stakeholders with the opportunity to raise policy-related issues and give technical inputs on the achievements and challenges met during implementation.

b. Institutional Framework of the MOPDD

The MOPDD is a division within the Institute for HIV/AIDs, Diseases Prevention and Control (IHDPCC) Department of the an affiliate of the Ministry of Health. MOPDD has the primary responsibility of coordination, planning, capacity building and technical oversight over the implementation of malaria activities at all levels including implementing partners. The division collaborates with different divisions within the RBC, MOH, line ministries, development partners, academia, private sector and the community at large

c. MOPDD Functional Roles

MOPDD develops and updates the malaria policies, strategic plan and guidelines. In addition, MOPDD provides technical support including building capacity, supervision, monitoring and evaluation of implementation at all levels.

MOPDD also establishes collaborations and partnership with relevant malaria stakeholders including research institutions and the private sector.

d. National Fiscal Planning Cycle and Alignment with Malaria Programme

The timeline for budgeting, planning and reporting of malaria annual work plans is aligned with the Ministry of Economic Planning and Financing (MINECOFIN) financial cycle which runs from 1st July to 30th June of each year. This Malaria strategic plan 2020-2024) is also aligned to the HSSP 4.

e. Partnerships and Coordination

MOPDD will work closely with Development Partners, donors, NGOs, FBOs and CSOs who are malaria stakeholders. Partners will also include departments in relevant ministries such as MINALOC, MINAGRI, MIGEPROF and MININFRA. Partnerships will range from technical consultations to joint implementation, monitoring and evaluation of malaria interventions. The MOPDD will also works closely with each implementing partner to co-develop annual workplans aligned with national priorities, strategies and available funds including PMI, CDC and WHO. Technical Working Groups (TWGs) comprising partners will be formed with assignment to assess and advise MOPDD on technical and policy malaria issues .

f. Cross-Border Malaria Initiatives

A new Great Lakes Malaria Initiative has been initiated to establish cross-border malaria collaboration among the East African Community members and the Democratic Republic of Congo. MOPDD will support efforts towards member country validation of the collaborative framework and the Great lakes Malaria Initiative Strategic Plan and where applicable synchronized implementation of interventions, with neighboring countries.

g. Procurement and Supply Management Systems

The national procurement system is supervised by Rwanda Public Procurement Authority (RPPA) which is an agency affiliated to the Ministry of Economy and Finances (MINECOFIN). The quantification of malaria commodities is done by a committee that is composed the MoH (LMO); RBC/Malaria Division; PMI/ Supply Chain Implementing Partner; USAID Supply chain Office; MPPD (Central Medical store); RBC/MCCH and; RBC/NRL MoH under the guidance of the Coordinated Procurement and Distribution System (CPDS) document.

h. Financial Resources Management and Audits

The national financial management is under the authority of MINECOFIN supervising and providing technical assistance to the budget entities. Each entity submits its annual budget to MINECOFIN on the basis of its negotiation with donors.

The Office of the Auditor General (OAG) conducts audits of all budget agencies and government projects. The Office of the Ombudsman also ensures transparency and deals with corruption and fraud, the Office of the General Prosecutor monitors implementation of audit findings and follow up of mismanagement reported. The Parliamentary Public Fund Committee oversees the implementation of audit recommendations on reported mismanagement. The MoH and the public institutions under its authority (including RBC) follow all the required Rwanda financial management mechanisms.

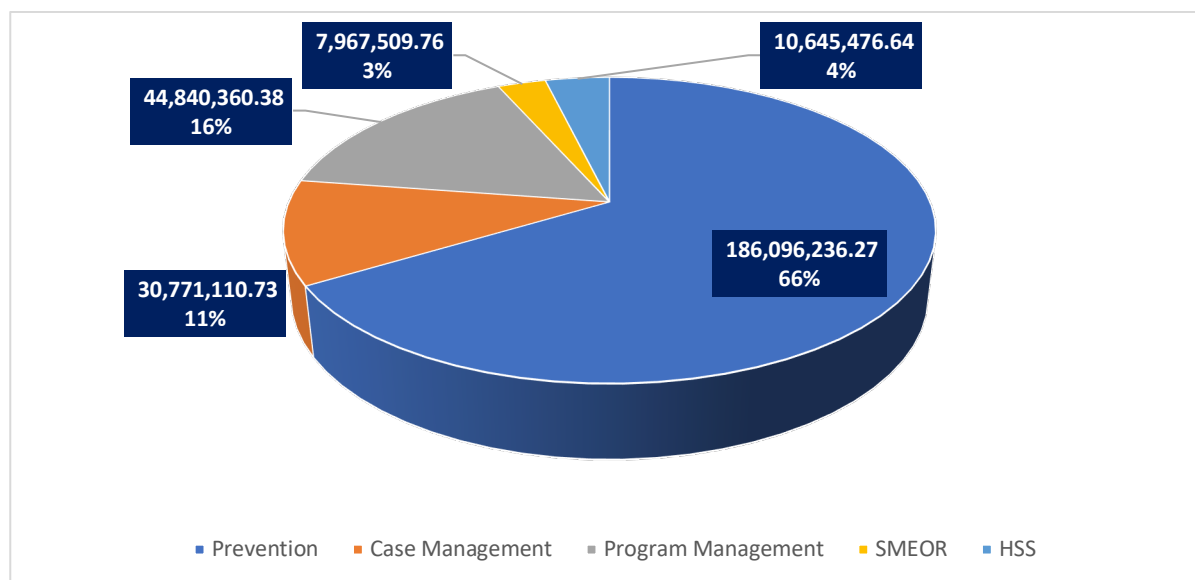
The MOPDD shall evaluate all the malaria interventions to make sure that value for money is obtained. By using malaria stratification information, resources shall be used for interventions that are considered to be appropriate in those areas.

6. BUDGET OF THE MALARIA NATIONAL STRATEGIC PLAN 2020-2024

Detailed costing of the Rwanda Malaria National Strategic Plan 2020-2024 was conducted using the WHO MSP costing guidelines and is included in Annex X. The total cost of implementing this strategy is an estimated **RWF 295,429,979,176.67 (US\$ 280,320,694)** to be met by the GoR, together with the Global Fund, development partners (USAID/PMI), and other international and local stakeholders (**Annex 5**).

Investments in Malaria Prevention has an allocation of **66 %** of the total NSP budget, followed by allocations to Program Management (**16%**), Malaria Case Management (**11%**) and Health System Strengthening (**4%**), and SMEOR (**3%**) as shown in **Figure 13** below which summarizes the costed budget of this NSP.

Figure 13: Malaria Strategic Plan Budget per Program Areas



Considering the fund commitments of **\$ 206,826,519.51**, the Rwanda National Strategic Plan 2020-2024 is funded at **74%** leaving a gap of **US \$73,494,174.27 (26%)** to be mobilized from different sources.

CHAPTER 7: MONITORING AND EVALUATION FRAMEWORK

Implementation of the Rwanda malaria strategic plan will be monitored and evaluated at regular intervals using the existing M&E systems and mechanisms.

1. TRACKING IMPLEMENTATION PROGRESS

The operational aspects of the programme will be monitored and the impact or process indicators measured to ensure that the activities implemented are yielding the desired results and moving the programme towards achieving its operational targets and objectives. Changes in epidemiological indicators resulting from the activities implemented will also be monitored.

Evaluation of the implementation of this Strategic Plan will be conducted through a Mid-Term Review in 2022 and an End Term Review in 2024. In addition, national joint annual assessments will be conducted. Every year a malaria action plan will be developed in collaboration with partners and an annual malaria implementation report disseminated to key stakeholders. Quarterly review meetings will also be held in line with the multisectoral approach to assess progress with partners at national and regional levels. Appropriate interpretation and utilization of results to inform policy and strategic revisions, when needed, will ensure progress.

The HMIS (morbidity and mortality), RapidSMS, eLMIS, SISCom, and the weekly IDSR system will serve as the key tools for data collection for monitoring the implementation of the programme activities. Population-based surveys (DHS and MIS) and other surveys such as health facility surveys, therapeutic efficacy studies, insecticide resistance and entomological monitoring studies will also be conducted. Operational research studies will be undertaken to inform specific technical and intervention implementation as well as programme annual reports, technical support supervision and activity reports.

2. PERFORMANCE FRAMEWORK

The Performance framework will be used in measuring progress in the implementation of this plan detailed in Annex 1. This will track progress on the implementation of planned interventions evaluated using a selected set of indicators. The methods for tracking progress will be fully detailed for process, input, output, outcome and impact.

3. DATA MANAGEMENT SYSTEM

The country's Health Management Information System (HMIS) is based on the electronic platform DHIS2 version 2.29 which records and reports all diseases including malaria and is established at all healthcare levels. All hospitals and health centers are equipped with internet to support the entry of data into the HMIS system, and data managers at these facilities have been trained on the management of data.

Integrated into the HMIS is SISCOM used for Community health worker reporting, RapidSMS is a Mobile application for SMS notification available to all public sector healthcare workers. In addition, is the DQA which is available for use on a tablet through the ODK platform.

In addition to the data from HMIS, the program uses other data sources for its monitoring and evaluation including surveys (DHS, MIS, Health facility survey, KAP survey) program evaluations eg. I-CCM evaluation and, program reports.

Routine data is collected continuously and systematically and can be accessed directly from the health management information system. Using this data for evaluative purposes is efficient and effective as it is collected from existing national data systems and provides more comprehensive coverage. In Rwanda, routine data is collected from patient records usually entered in a register and subsequently recorded in the Health Management Information System available at all health centers and hospitals. Community health workers submit manual results to the health centers to be recorded in the HMIS. All data entered in the HMIS reflects the national performance because of the high reporting rate of the health facilities. Almost all health facilities report their results on time.

Data is collected on a monthly level for CHWs and on a weekly level at hospital level this allows for programme analysis of data to show trends of cases and deaths throughout the country, data elements have been revised as well as refined in the HMIS systems in August 2019 to allow for appropriate data collection and capture.

Initiatives are in place to improve the reporting of private facilities. Private sector health facilities reporting into HMIS it is now mandatory and a commitment to this is a requirement before a private health facility is granted approval to open. A standardized reporting tool for private sector has also been developed.

4. M&E COORDINATION MECHANISM

At national level, MOPDD works in collaboration with the districts and partners to coordinate and implement M&E activities.

CHAPTER 8: ANNEXES:

ANNEX 1: PERFORMANCE FRAMEWORK

ITEMS	Indicators	Baseline			Y1	Y2	Y3	Y4	Remarks
		Value	Year	Source	2020/21	2021/22	2022/23	2023/24	
GOAL	IMPACT INDICATORS								
By 2024, reduce malaria morbidity and mortality by at least 50% of the 2019 levels	Malaria Prevalence in U5	7	2017	MIS2017	6.1		4.4		
	Malaria Prevalence in PW	5	2017	MIS 2017	4,1		3		
	Annual Parasite Incidence per 1000 persons	321	2019	HMIS	281	156	137	127	
	Number of Malaria Deaths	264	2019	HMIS	231	198	165	132	
OBJECTIVE 1	OUTCOME INDICATORS								
By 2024, at least 85% of population at risk will be effectively protected with preventive interventions	Proportion of population effectively protected by either IRS or LLINs	68	2017	MIS	70	75	85	85	
	IRS coverage in targeted districts	98	2017	Malaria Annual report	98	98	98	98	
	Proportion of population effectively protected by IRS in targeted 12 districts	75	2017	Malaria Annual report	80	85	85	85	
	Percentage of U5 who slept under an LLIN	68	2017	MIS2017	75	NA	85	NA	
	Percentage of pregnant women who slept under and LLIN	69	2017	MIS2017	75	NA	85	NA	
	Percentage of population aged 5-14 who slept under an LLIN	57	2017	MIS2017	70	NA	85	NA	
	Proportion of total population who slept under an LLIN the previous night	64	2017	MIS2017	70	NA	85	NA	

ITEMS	Indicators	Baseline			Y1	Y2	Y3	Y4	Remarks
		Value	Year	Source	2020/21	2021/22	2022/23	2023/24	
OBJECTIVE 2:	OUTCOME INDICATORS								
All suspected cases are promptly tested and treated in line with national guidelines	Proportion of suspected malaria cases that receive a parasitological test at public sector health facilities	NA		HMIS	90	90	95	95	
	Proportion of suspected malaria cases that receive a parasitological test in the community	NA		HMIS	90	90	95	95	
	Proportion of confirmed malaria cases that received first-line antimalarial treatment at public sector health facilities.	99	2018-19	HMIS	99	99	99	99	
	Inpatient malaria deaths per year: rate per 100,000 persons per year	2.10	2018-19	HMIS	2.1	1.5	1.2	1.0	
	Percentage of person treated within the 24 hours at community level	95%	2018-19	Malaria Division Annual Report	96%	96%	96%	96%	
	Proportion of health providers trained on malaria case management	98	Program report	Annual Program Report	99	99	99	99	
	Percentage of CHWs that reported no stock out of ACTs and RDTs.	NA	2018-19	iCCM evaluation	85	87	88	90	

ITEMS	Indicators	Baseline			Y1	Y2	Y3	Y4	Remarks
		Value	Year	Source	2020/21	2021/22	2022/23	2023/24	
OBJECTIVE 3:		OUTCOME INDICATORS							
By 2024,strengthening surveillance and reporting in order to provide complete and timely accurate information for appropriate decision making at all levels	Proportion of health facilities reporting on malaria indicators on time (Public and private).	80	2018-19	HMIS	83	85	90	95	
	Proportion of health facilities submitting complete reports on malaria indicators (Public and private).	85	2018-19	HMIS	87	90	93	98	
	Annual Blood Examination Rate	71.8	2018-19	HMIS	65	63	60	60	
	Number of community and health facilities evaluations conducted	2	2018	Malaria Annual report	4	3	3	4	
OBJECTIVE 4:		OUTCOME INDICATORS							
By 2024, strengthen coordination, collaboration, PSM and effective program management	Proportion of malaria coordination meetings planned at national and district Level	NA	2018-19	MOPDD and HDs	4	4	4	4	
	Number of annual plan developed	1	2018-19	Malaria Division Annual Report	1	1	1	1	
	Number of Joint review and planning meetings conducted	1	2018-19	Malaria Division Annual Report	1	1	1	1	
	Proportion of public HFs that reported no stock outs of ACTS and RDTs	97	2018-19	Malaria Division Annual Report	98	98	99	100	
	Proportion of malaria commodity tenders executed (on time) according to procurement plan	1	2018-19	Malaria Division Annual Report	1	1	1	1	

ITEMS	Indicators	Baseline			Y1	Y2	Y3	Y4	Remarks
		Value	Year	Source	2020/21	2021/22	2022/23	2023/24	
	Proportion of activities implemented as per action plan	62%	2018-19	Malaria Division Annual Report	75	75	75	75	
	Proportion of disbursed fund versus MSP budget	Check in MPR Report	2018-19	Malaria Division Annual Report	90	95	95	100	
	Proportion of executed budget versus planned funds	Check in the MPR report	2018-19	Malaria Division Annual Report	90	95	95	100	
OBJECTIVE 5:	OUTCOME INDICATORS								
By 2024, 85% of the population will have correct and consistent practices and behaviours towards malaria control interventions	Proportion of women who recognize fever as a symptom of malaria	81%	2017	MIS	90%	NA	95%	NA	
	Proportion of women who reported mosquito bites as a cause of malaria	87%	2017	MIS	90%	NA	95%	NA	
	Proportion of the population who recognize signs of malaria	91,3%	2017	MIS	95%	NA	95%	NA	
	Proportion of the population who knows the mode of transmission of malaria	95%	2017	MIS	95%	NA	98%	NA	

ANNEX 2: IMPLEMENTATION PLAN

Objective 1: by 2024, at least 85% of population at least will effectively protected with preventive interventions

Strategies	Activities	Responsible	FY beginning 2020 and ending 2024				
			20	21	22	23	24
Strategy 1.1: . Sustain and extend IRS in high malaria incidence districts	1.1.1 Develop a standard operating manual for malaria detection, classification and reporting		X	X	X	X	X
	1.1.2 Conduct focal IRS in moderate and low malaria endemic districts in response to management of malaria outbreaks/epidemics		X	X	X	X	X
	1.1.3 Conduct the IRS in response to the requests of malaria management in specific public settings (refugee camps, prisons, boarding schools, health facilities etc.)		X	X			
	1.1.4 Evaluate the quality and residual efficacy (bioassays, entomological monitoring in selected districts implementing IRS.		X	X	X	X	
	1.1.5 Develop the capacity of IRS implementation and integrate it into the development plans of targeted districts						
1.2: Universal coverage in LLINs (mass distribution and routine distribution through EPI, ANC, PPP	1.2.1 Organize LLINs mass distribution campaigns				X		
	1.2.2 Conduct routine distribution of LLINs using ANC channels		X	X	X	X	X
	1.2.3 Conduct routine distribution of LLINs using EPI channels		X	X	X	X	X
	1.2.4 Distribute LLINs through public-private sector, based on social marketing		X	X	X	X	X
	1.2.5 Perform quality control of LLINs on arrival and under field conditions		X	X	X	X	X
1.3 Introduction of innovative Integrated vector control tools to supplement the core interventions	1.3.1 Conduct pilot larval source management interventions in selected areas targeting the urban and localized rural areas		X	X	X	X	X
	1.3.2 Conduct pilot larval source management using larvivorous fish in water dams and channels of irrigated agricultural systems		X	X	X	X	X
	1.3.3 Conduct social marketing and distribution of personal protection tools such as spatial and personal repellants to prevent human mosquito contact		X	X	X	X	X
1.4 Community based environment management through community works/ meetings	1.3.4 Develop the capacity of districts to effectively implement environmental management by larval source management		X	X	X	X	X
	1.3.2 Conduct follow up meetings and supervisions of the implementation of community based environmental management			X	X	X	X

Objective 2: All suspected cases are promptly tested and treated in line with national guidelines

Strategies	Activities	Responsible	FY beginning July 2020 and ending 2024				
			20	21	22	23	24
Strategy 2.1: Strengthen the quality of malaria diagnosis at all levels including private sector	2.1.1: Conduct annual quantification of lab commodities and medicines		X	X	X	X	X
	2.1.2: Provide tests and microscopy commodities at HFs: slides, safety boxes, RDTs, thermometers		X	X	X	X	X
	2.1.3: Provide tests and microscopy commodities at community: slides, safety boxes, RDTs, thermometers		X	X	X	X	X
	2.1.4: Conduct quarterly monitoring of the distribution of commodities at all levels by DP and central level		X	X	X	X	X
	2.1.5: Conduct quality control of malaria test at Community, HF, and Districts and referral Hospitals		X	X	X	X	X
	2.1.6: Provide reporting tools (registers, ordinograms, stock cards and code cards)		X	X	X	X	X
	2.1.7: Distribute reporting tools (registers, ordinograms, stock cards and code cards)		X	X	X	X	X
	2.1.8: Procure Smartphones for CHWs			X		X	
	2.1.9: Distribute Smartphones for CHWs			X		X	
	2.1.10: Conduct a TOT training of lab technicians on malaria microscopy and RDT testing at DH level			X		X	
	2.1.11: Conduct External competency assessment for Malaria microscopy			X		X	
	2.1.12: Conduct training of CHWs in RDTs and blood smear testing			X		X	
	2.1.13: Conduct training to laboratory technicians (HPs, HCs, DHs, and provincial and Referral) in RDTs and blood smear testing, density and			X		X	
	2.1.14: Conduct Malaria molecular diagnosis at NRL			X	X	X	X

	2.1.15: Procure commodities for molecular diagnosis (Malaria PCR) for NRL			X		X	
Strategy 2.2: Strengthen prompt and correct simple malaria treatment at all levels including private sector	2.2.1: Revise the guidelines on malaria case management			X		X	
	2.2.2: Cascade training of CHWs, HPs, HCs, DHs, provincial, Referral Hospitals and District Pharmacies on malaria guidelines			X		X	
	2.2.3: Conduct training of health providers in private sector on malaria treatment guidelines			X		X	
	2.2.4: Produce and distribute guidelines to all levels			X		X	
	2.2.5: Conduct annual quantification of antimalarial drugs and other commodities for simple malaria cases in private and public sector		X	X	X	X	X
	2.2.6: Conduct bi annual quantification of antimalarial drugs and other commodities for simple malaria case in private and public sector		X	X	X	X	X
	2.2.7: Conduct quarterly supply plan review of antimalarial drugs and other commodities for simple malaria case in private and public sector		X	X	X	X	X
	2.2.8: Monitoring the distribution of antimalarial medicines and commodities by DP, HF and the community		X	X	X	X	X
	2.2.9: Procure malaria commodities		X	X	X	X	X
	2.2.10: Conduct bi annual meeting with District pharmacies on malaria supply chain management		X	X	X	X	X
	2.2.11: Conduct workshop to Medical (Interns and residents) and Nurses in their final year on updated malaria case management guidelines		X	X	X	X	X
	2.2.12: Conduct quarterly internal and external assessment of malaria case management at all levels		X	X	X	X	X
	2.2.13: Conduct bi-annual mentorship on malaria case management in all DH, HC and Community		X	X	X	X	X
	2.2.14: Conduct routine supervision of Community, public and private sector on malaria case management and supply chain management		X	X	X	X	X
	2.3.1: Conduct QC of antimalaria drugs and RDTs		X	X	X	X	X

Strategy 2.3: Strengthen referral and case management of severe malaria cases at health facility level	2.3.2: Conduct quarterly DQA in public and private sector		X	X	X	X	X
	2.3.4: Conduct bi-annual mentorship on malaria case management in all DH, HC and Community		X	X	X	X	X
	2.3.5: Conduct routine supervision of public and private sector on severe malaria case management and supply chain management		X	X	X	X	X
Strategy 2.4: Strengthen mechanisms to maintain competency of health workers in malaria case management at all levels including private sector	2.4.1: Conduct quarterly internal and external quality control of Blood Smear and control system for diagnosis of malaria at all levels		X	X	X	X	X
	2.4.2: Conduct annual external quality control of antimalarial drugs		X	X	X	X	X
	2.4.3: Conduct annual external quality control of RDTs and laboratory reagents (GIEMSA, immersion oil).		X	X	X	X	X
	2.4.4: Conduct annual training of lab technicians on QA/QC and accreditation (WHO guidance)		X	X	X	X	X
Strategy 2.5: 5. Ensure quantification and distribution of quality assured malaria consumables and commodities	2.5.1: Conduct annual quantification of antimalarial drugs and other commodities public in private sector		X	X	X	X	X
	2.5.2: Conduct bi-annual quantification of antimalarial drugs and other commodities in public and private sector		X	X	X	X	X
	2.5.3: Conduct quarterly supply plan review of malaria commodities in public and private sector		X	X	X	X	X
	2.5.4: Monitor the distribution of malaria commodities by DP, HF and the community		X	X	X	X	X
	2.5.5: Procure malaria commodities		X	X	X	X	X
	2.5.6: Distribute malaria commodities		X	X	X	X	X
	2.5.7: Conduct bi annual meeting with District pharmacies on malaria supply chain management		X	X	X	X	X
	2.5.8: Conduct QC of antimalaria drugs and RDTs		X	X	X	X	X

Strategy 2.6. Strengthen early detection and treatment in pregnant women	2.6.1: Update and distribute malaria guidelines and job aids for ANC in HFs		X		X		X
	2.6.2: Conduct workshop for health workers on Malaria detection and treatment and preventive messages for pregnant women		X		X		X
	2.6.3: Provide integrated data collection tools for MiP for HFs		X		X		X
	2.6.4: Provide LLINs to districts for distribution to pregnant women attending ANC clinics		X	X	X	X	X
	2.6.5: Support communities on antenatal care attendance in collaboration with local leaders and CHWs.		X	X	X	X	X

Objective 3: By 2024,strengthening surveillance and reporting in order to provide complete and timely accurate information for appropriate decision making at all levels

Strategies	Activities	Responsible	FY beginning July 2020 and ending 2024				
			20	21	22	23	24
Strategy 3.1:Strengthen malaria routine surveillance and epidemic preparedness and response (EPR) at all levels	3.1.1: Elaborate malaria epidemic preparedness and response plan		X				
	3.1.2: Train the health provider, data manager officer and M&E officer to malaria epidemic preparedness and response			X		X	
	3.1.3: Conduct quarterly SMEOR SUB-TWG meeting		X	X	X	X	X
Strategy 3.2:Strengthen capacity building in data management, data quality, analysis and use at all levels	3.2.1: Strengthen mentorship and supportive supervisions activities		X	X	X	X	X
	3.2.2: Conduct quarterly data quality audit at decentralized level		X	X	X	X	X
	3.2.3: Conduct monthly data analysis of malaria indicators to support decision making		X	X	X	X	X
	3.2.4: Conduct quarterly Coordination meeting to review malaria data quality and Analysis		x	x	x	x	x
	3.2.5: Organize a training of health provider , data manager and M&E officer in data management, data quality, analysis and information use		X	X	X	X	X

Strategy 3.3: Conduct community and health facilities evaluation	3.3.1: Conduct the MIS				X		
	3.3.2: Contribute the DHS preparation and implementation						X
	3.3.3: Conduct the HFS			X		X	
	3.3.4: Conduct Malaria ICCM evaluation			X		X	
	3.3.5: Conduct insecticide resistance monitoring		X	X	X	X	X
	3.3.6: Conduct an LLINs durability evaluation			X		X	
	3.3.7: Conduct a KAP survey				X		
	3.3.8: Conduct the therapeutic efficacy survey		X		X		X
Strategy 3.4: Strengthen severe malaria notification and conduct malaria death audits	3.4.1: Improve Implementation and follow up of SMS notification for severe malaria cases		X		X		X
	3.4.2: Conduct training of Health providers (CHWs, HCs, Hospitals)on Community Health digital solution		X		X		X
	3.4.3: Conduct regular deaths audit		X	X	X	X	X
	3.4.4: Integrate the malaria deaths audit into DHIS2 system		X				
Strategy 3.5: Improve reporting from the private health sector	3.5.1: Training of health care providers and data managers in data management, data quality, analysis and information use in private health facilities		X		X		X
	3.5.2: Conduct supportive supervision and DQA of private health facilities		X	X	X	X	X
	3.5.3: Update the list of active private health facilities in DHS2		X	X	X	X	X

	3.5.4: Integrate private health facilities in quarterly data review meetings		X	X	X	X	X
Strategy 3.6: Develop and implement an operational research agenda for malaria	3.6.1: Establish strong collaboration initiative with local and international research institutions		X	x	x	x	x
	3.6.2: Define and update malaria operational research agenda		X	X	X	X	X
	3.6.3: Implement malaria operational research		X	X	X	X	X
	3.6.4: Dissemination of malaria finding through local and international platform		X	X	X	X	X

Objective 4: By 2024, Strengthen coordination, collaboration, PSM and effective program management

Strategies	Activities	Responsible	FY beginning July 2020 and ending 2024				
			20	21	22	23	24
Strategy 4.1: Mobilization of adequate financial resources	4.1.1: Develop an evidence based proposal to sustain and increase government resources for malaria control	Malaria Division	X				
	4.1.2: Produce funding proposals to sustain and increase external funding mechanisms/agencies for malaria control (PMI and GF)	Malaria Division	X		X		
	4.1.3: Develop an investment case targeting and attracting new source of funds including private sector for malaria control	Malaria Division					
Strategy 4.2: Strengthen the Intra and Inter Sector Collaboration and Coordination for malaria control at all levels	4.2.1: Establish End Malaria Council and fund	Malaria Division					
	4.2.2: Support development of the End Malaria council and fund business plan	Malaria Division					
	4.2.3: Revitalize the Malaria Technical working group (Define TORs and sub-groups and organize regular meeting)	Malaria Division					
	4.2.4: Provide technical support to existing decentralized level platforms such as DHMTs and coordination meetings for malaria control	Malaria Division					

Strategies	Activities	Responsible	FY beginning July 2020 and ending 2024				
			20	21	22	23	24
Strategy 4.3: Synchronization and alignment of malaria commodities procurement and supply management	4.3.1: Develop a comprehensive malaria commodity need assessment	Malaria Division					
	4.3.2: Develop a comprehensive annual malaria commodities procurement plan	Malaria Division					
	4.3.3: Conduct data triangulation between patient data and commodities	Malaria Division					
	4.3.4: Ensure pharmacovigilance of malaria commodities from public and private health facilities	Malaria Division					
Strategy 4.4: Strengthen Regional collaboration	4.4.1: Contribute to the development of the Great Lakes malaria Regional strategy and collaboration framework						
	4.4.2: Contribute to the implementation of the Great Lakes malaria regional strategy						
Strategy 4.5: Strengthen human resources, material capacity of the malaria programme	4.5.1: Maintain and retain staff- pay staff salaries						
	4.5.2: Participate in international meetings and workshops						
	4.5.3: Provide full scholarship for malaria entomologists and epidemiologists						
	4.5.4: Procure equipment (laptops, scanner, printers, LCD)						
	4.5.5: Provide running cost to the Division						
	4.5.6: Pay incentive for CHWs						
Strategy 4.6: Conduct coordination and planning sessions for the malaria program and key stakeholders	4.6.1: Conduct regular planning meetings of the program and stakeholder						
	4.6.2: Develop annual work plan						
	4.6.3: Conduct a Malaria Program Review (MTR and MPR)						
	4.6.4: Develop Malaria Strategic Plan						

Objective 5: By 2024, 85% of the population will have correct and consistent practices and behaviours towards malaria control interventions

Strategies	Activities	Responsible	FY beginning July 2020 and ending 2024				
			20	21	22	23	24
Strategy 5.1: Strengthen SBCC malaria framework	5.1.1: Finalize and implement Malaria SBCC strategy to guide interventions						
Strategy 5.2: Increase awareness on community role in malaria prevention and control interventions	5.2.1: Develop tools and integrated messages towards malaria prevention and control						
	5.2.2: Organize mass media campaigns for community engagement on malaria prevention and control						
	5.2.3: Conduct community outreach events for malaria prevention and control						
Strategy 5.3: Advocate for high level support to sustain malaria prevention and control interventions including social marketing	5.3.1: Implement high-level advocacy meetings with different stakeholders on malaria prevention and control (Parliament, Socio cluster ministries, Governors, Districts, Faith based Organization Leaders and CSOs)						
Strategy 5.4: Promote community engagement in malaria prevention and control interventions	5.4.1: Engage schools to actively participate in malaria prevention and control intervention						
	5.4.2: Engage with CSOs to support and promote community engagement and ownership in malaria prevention and control through SBCC mass campaigns and social marketing						
	5.4.3: Engage FBOs Leaders to actively participate in Malaria prevention and control interventions.						
	5.4.4: Engage with Agriculture Cooperatives to own Malaria prevention and control intervention particularly larva source management						
	5.4.5: Conduct malaria sport competitions within high endemic districts (foot ball matches)						
	5.4.6: Engage community to actively participate in malaria prevention and control intervention through existing community forums						
	5.4.7: Launch "Zero Malaria starts with Me" Campaign						

ANNEX 3: MONITORING AND EVALUATION MATRIX

Item	Indicator Name	Operational definition	Indicator Type	Data Source	Frequency of reporting	Responsible	Baseline	Targets			
								2020-2021	2021-2022	2022-2023	2023-2024
Goal: By 2024, reduce malaria morbidity and mortality by at least 50% of the 2019 levels.	1. Annual Parasite Incidence per 1,000 persons	N: No of new confirmed malaria cases (all ages) reported through HMIS/SICOM D: Total Population	Impact	HMIS	Annually	MOPDD/RBC	321/1000 (HMIS2018-19)	281	156	137	127
	2. Inpatient malaria deaths per 1,000 persons per year	N: No of Inpatient malaria deaths reported by MIS D: Total number of persons	Impact	HMIS	Annually	MOPDD/RBC	2,1/1000 (HMIS2018-19)	2	1,5	1,2	1
	3. Number of confirmed malaria deaths	N: No of confirmed malaria deaths reported by DH&RH through HMIS	Impact	HMIS	Annually	MOPDD/RBC	264 (HMIS2018-19)	231	198	165	132
	4. Malaria prevalence in U5	N: No of U5s tested positive with microscopy D: Total number of Under of under-five tested	Impact	MIS	Annually	MOPDD/RBC	7% (MIS2017)	6,1	NA	4,4%	NA
	5. Malaria prevalence in Pregnant Women	N: No of Pregnant Women who tested positive with microscopy D: No of Pregnant Women tested	Impact	MIS	Annually	MOPDD/RBC	5 % (DHS2014-15)	4,1	NA	3	NA
By 2024, at least 85% of population at risk will be effectively protected with preventive interventions	1. Percentage of the population that could sleep under an ITN if each ITN in the household were used by up to two people	N: No of households with at least one LLINs for 2 people in the HH surveyed D: No of household surveyed	Outcome	MIS/DHS	MIS –every two years DHS-every five years	MOPDD, NISR	55% (MIS)	60	NA	85	NA
	2. Proportion of HH with at least one LLIN	N: No of Households with at least one LLIN in the HH surveyed D: No of household surveyed	Outcome	MIS/DHS	MIS is conducted every 2 years and DHS every five years	MOPDD, NISR	84 % (MIS)	85%	NA	90%	NA
	Proportion of population effectively protected by either IRS or LLINs	N: number of persons protected either by IRS or LLINs D: Total population	Outcome	MIS/DHS	MIS is conducted every 2 years and DHS every five years	MOPDD, NISR	68%	75	85	95	NA

Item	Indicator Name	Operational definition	Indicator Type	Data Source	Frequency of reporting	Responsible	Baseline	Targets			
								2020-2021	2021-2022	2022-2023	2023-2024
	3. Proportion of children under five years old who slept under a LLIN the previous night	N: No of children under five years old who slept under a LLIN the previous night in the HH surveyed D: No of household surveyed	Outcome	MIS/DHS	MIS is conducted every 2 years and DHS every five years	MOPDD, NISR	68 % (MIS2017)	75	NA	85	NA
	4. Proportion of pregnant women, who slept under a LLIN the previous night	N: No of Pregnant women who slept under a LLIN the previous night in the HH surveyed D: No of pregnant women in the household surveyed	Outcome	MIS/DHS	MIS is conducted every 2 years and DHS every five years	MOPDD, NISR	69% (MIS2017)	73	NA	85	NA
	5. Percentage of population aged 5-14 who slept under an LLIN	N: No of persons who slept under a LLIN the previous night in the HH surveyed D: No of persons in the household surveyed	Outcome	MIS/DHS	MIS is conducted every 2 years and DHS every five years	MOPDD, NISR	57% (MIS2017)	70	NA	85	NA
	6. Proportion of total population who slept under an LLIN the previous night	N: No of total population who had slept under LLIN the previous night in the HH with at least one LLIN D: total population with at least one LLIN in HH surveyed	Outcome	MIS/DHS	MIS is conducted every 2 years and DHS every five years	MOPDD, NISR	64% (MIS 2017)	68%	NA	85%	NA
	Proportion of structures in targeted areas that received indoor residual spraying (IRS) during the reporting period (IRS coverage in targeted districts)	N: No of sprayed structures in targeted Districts D: Number of structure targeted/enumerated	Outcome	MOPDD Activity Report	Annually	MOPDD	98% (IRS 2018-19)	98%	98%	98%	98%
	Proportion of population effectively protected by IRS in targeted 12 districts	N: No of residents in sprayed rooms/household in targeted areas/districts D: Total population in targeted areas/districts	Outcome	MOPDD Activity Report	Annually	MOPDD	98% (IRS 2018-19)	75%	85%	95%	95%
	Proportion of targeted districts covered by IRS	N: No of targeted districts that have been covered by IRS D: Total targeted districts	Outcome	MOPDD Activity Report	Annually	MOPDD	83% (IRS 2018-19)	100	100	100	100

Item	Indicator Name	Operational definition	Indicator Type	Data Source	Frequency of reporting	Responsible	Baseline	Targets			
								2020-2021	2021-2022	2022-2023	2023-2024
Objective 2: All suspected cases are promptly tested and treated in line with national guidelines	Proportion of fever cases that receive a malaria parasitological test at public health facilities	N: No of fever cases that receive a malaria parasitological test at all levels (public, community, private). D: No of fever cases admitted at public health facilities.	Outcome	HMIS	Annually	MOPDD-RBC	NA (2018-19)	90%	95%	95%	95%
	Proportion of fever cases that receive a malaria parasitological test at community level	N: No of fever cases that receive a malaria parasitological test at all levels (public, community, private). D: No of fever cases admitted at community	Outcome	HMIS	Annually	MOPDD-RBC	NA (2018-19)	90%	95%	95%	95%
	Proportion of confirmed malaria cases that received first-line antimalarial treatment according to national guidelines at public sector health facilities	N: No of confirmed malaria cases that received first line antimalarial treatment according to the national guidelines at public sector health sector D: No of confirmed and treated malaria cases	Output	HMIS	Annual	MOPDD	101% (HFs 2016)	100%	100	100%	100%
	Proportion of confirmed malaria cases that received first-line antimalarial treatment according to national guidelines at health facility level	N: No of confirmed malaria cases that received first line antimalarial treatment according to the national guidelines at community level (ACTs) D: No of confirmed and treated malaria cases	Output	HMIS/SYSCOM	Annual	MOPDD	101% (HMIS2018-19)	99%	99%	99%	99%
	Percentage of HC that reported no stock out of ACT lasting more than 7 days in the previous month	N: No of HF that reported no stock out of ACT lasting more than 7 days in the previous month D: All HF	Output	DHIS2	Annually	MOPDD	99.3% (HMIS2018-19)	99%	99%	99%	99%
	Percentage of person treated within the 24 hours at community level	N: Number of Malaria cases treated within 24hrs at community D: Total number of malaria cases treated at community level	2018-19	Malaria Division Annual Report	Annually	MOPDD	95%	96%	96%	96%	96%

Item	Indicator Name	Operational definition	Indicator Type	Data Source	Frequency of reporting	Responsible	Baseline	Targets			
								2020-2021	2021-2022	2022-2023	2023-2024
	Proportion of health facilities which reported stock out for RDT	N: No of HF that reported no stock out of RDT lasting more than 7 days in the previous month D: All HF	Output	HMIS	Annually	MOPDD	98% (HMIS 2018-19)	98%	99%	99%	99%
Objective3:By 2024,strengthening surveillance and reporting in order to provide complete and timely accurate information for appropriate decision making at all levels	Proportion of public health facilities submitting malaria indicators timely	N:Number of public health facilities submitting malaria indicators timely D:All public health facilities	Output	DHIS-II	Annually	MOPDD	95,8% ((2018-19)	96%	97%	98%	98%
	Proportion of public health facilities submitting complete report on malaria indicators	N:Number of public health facilities submitting complete report on malaria indicators (which reported)	Output	DHIS-II	Annually	MOPDD	97,6% (2018-19)	98%	99%	99%	99%
	Proportion of private health facilities submitting complete report on malaria indicators	N:Number of private health facilities submitting malaria complete report D:All public health facilities (which reported)	Output	DHIS-II	Annually	MOPDD	51% (2018-19)	55%	60%	65%	65%
Objective 4: By 2024, strengthen coordination, collaboration, PSM and effective program management	Number of cross border initiatives set up	Number of cross border initiatives set up	Output	MOPDD Annual Report	Annual report	MOPDD	1 (2018-19)	1	1	1	1
	Number of annual meeting with strong recommendations organized with Rwanda participation	Number of annual meeting with strong recommendations organized with Rwanda participation	Output	MOPDD	Annual report	MOPDD	1 (2018-19)	1	1	1	1
	Proportion of malaria coordination meetings held vis a vis planned at national and decentralized Level	N; number of coordination meetings organized at central and decentralized level D: number of coordination meeting planned at central and decentralized level	Output	MOPDD	Annual report	MODPP	TBD for 2018-19	4	4	4	4
	Number of annual plan developed in collaboration with stakeholders	Number of annual plan developed	Output	MOPDD	Annual report	MOPDD	1	1	1	1	1

Item	Indicator Name	Operational definition	Indicator Type	Data Source	Frequency of reporting	Responsible	Baseline	Targets			
								2020-2021	2021-2022	2022-2023	2023-2024
	Number of Joint review and planning meetings conducted	Number of Joint review and planning meetings conducted	Output	MOPDD	Annual Report	MoPDD	TBD	1	1	1	1
	Proportion of public HFs that reported no stock outs of ACTs and RDTs	N; number of public Health Facilities that reported no stock out of ACTs and RDTs Den: Total of Health Facilities	Output	MOPDD	Annual Report	MoPDD	98%	99%	99%	100%	100%
	Proportion of malaria commodity tenders executed (on time) according to procurement plan	N: number of tenders (malaria commodities) executed on time D: total of tenders (malaria commodities)	Output	MOPDD	Annual Report	MoPDD	TBD	2	2	2	2
Objective5: By 2024, 85% of the population will have correct and consistent practices and behaviours towards malaria control interventions	Proportion of women who recognize fever as a symptom of malaria	N; No of women who recognize fever as a symptom of malaria D: Number of women surveyed	Output	MIS, KAP Survey	Every two years (MIS)	MOPDD	81% (MIS2017)	90%	NA	95%	NA
	Proportion of women who reported mosquito bites as a cause of malaria	N: No of women who recognize fever as a symptom of malaria D: Number of women surveyed	Output	MIS, KAP Survey	Every two years (MIS)	MOPDD	87% (MIS 201)	90%	NA	95%	NA
	Proportion of the population who recognize signs of malaria	N: No of population who recognize fever as a symptom of malaria D: Number of population surveyed	Output	MIS, KAP Survey	Every two years (MIS)	MOPDD	91,3% (MIS 20170)	95%	NA	95%	NA
	Proportion of the population who knows the mode of transmission of malaria	N: Number of persons who knows the mode of transmission of malaria D: No of persons surveyed	Output	MIS, KAP Survey	Every two years (MIS)	MOPDD	95% (MIS 2017)	95%	NA	98%	NA

ANNEX 4: DISSEMINATION PLAN

#	Activities	2020				2021				2022				2023				2024			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.	Annual Reports																				
2.	Mid-term review report																				
3.	End-term review report																				
4.	World Malaria report																				
5.	Monthly malaria reports																				
6.	Malaria scorecards																				
7.	KAP Studies																				
8.	Therapeutic efficacy study reports																				
9.	Technical Supervision reports																				
10.	IRS Report																				
11.	Entomological report																				
12.	Malaria Indicator Survey report																				
13.	DHS																				
14.	Health Facility Survey reports																				
15.	LLIN durability reports																				
16.																					

ANNEX 5: BUDGET SUMMARY BY MSP OBJECTIVES

NSP PROGRAM AREAS	FY20-21_USD	FY21-22 USD	FY22-23 USD	FY23-24 USD	Sum of Total Cost FY20-24 USD
1. Malaria Prevention	39,345,648	68,889,200	39,396,391	38,464,997	186,096,236
1.1 IRS	27,524,613	25,044,572	25,853,381	24,067,562	102,490,129
1.2 LLINs	9,013,225	32,171,945	1,587	1,587	41,188,345
1.3 Vector Control	-	7,044,730	9,057,663	11,811,231	27,913,624
1.4 Environment management	-	106,502	94,490	82,879	283,872
1.5 Community awareness and engagement	791,558	4,104,378	3,972,197	2,084,664	10,952,799
1.6 Mass Media	2,016,252	417,072	417,072	417,072	3,267,468
2. Malaria Case Management	7,964,170	7,402,065	8,371,344	7,033,532	30,771,111
2.1 Diagnosis	3,256,772	3,667,577	4,376,619	3,587,420	14,888,389
2.2 Simple Malaria	4,023,452	1,767,353	2,327,590	1,774,476	9,892,871
2.3 Severe Malaria	183,946	1,207,180	1,207,180	1,207,180	3,805,486
2.4 Commodities management	-	161,757	161,757	166,259	489,773
2.5 Ensuring drug quality	500,000	598,197	298,197	298,197	1,694,592
4. Malaria Program Management	14,873,206	9,331,523	9,667,445	10,968,187	44,840,360
4.1 Advocacy	-	10,453	44,724	60,997	116,174
4.2 Coordination	14,873,206	9,321,069	9,622,721	10,907,190	44,724,186
3. Malaria SMEOR	1,329,423	2,838,413	1,957,917	1,841,757	7,967,510
3.1 Data Quality	114,280	909,955	592,789	776,629	2,393,653
3.3 Surveys	508,112	945,137	381,807	81,807	1,916,863
3.6 Research	-	380,820	380,820	380,820	1,142,461
3.7 Entomological surveillance	592,752	544,000	544,000	544,000	2,224,752
3.8 Integrated Supervision	114,280	58,500	58,500	58,500	289,781
5.HSS	559,665	5,003,584	2,534,491	2,547,737	10,645,477
CHWs supervision	258,256	377,697	377,697	377,697	1,391,346
DHS	-	-	-	28,335	28,335
Digitalization	258,256	-	119,104	-	377,360
DQA	43,153	127,772	127,772	127,772	426,469
HFS	-	-	-	-	-
HMIS	-	46,454	46,454	46,454	139,362
Joint HSS	-	4,451,661	1,863,464	1,967,479	8,282,605
Grand Total	64,072,113	93,464,784	61,927,588	60,856,209	280,320,694