Government of Sierra Leone
Ministry of Health and Sanitation

Sierra Leone Malaria Control Strategic Plan 2016-2020

"Access to malaria control interventions for all"

October 2015

Table of Contents

Table of Contents **1**
List of figures **6**
List of tables **7**
List of Annexes **8**
List of Abbreviations and Acronyms **12**
Executive summary **14**
Vision, Mission, Goals and Objectives 15

Monitoring of the SLMSP **18**
Summary Budget **20**
CHAPTER I: BACKGROUND **21**
1.1. Introduction 21

1.2. National and international context and commitments 22

1.3. The Process of Developing the National Strategic Plan 23

CHAPTER II: COUNTRY PROFILE **24**
2.1. Overview 24

2.2. Socio-Political system 25

2.3. Demographic Characteristics 26

2.4. Ecosystem, environment and climate 27

2.5. Socio-economic situation 27

Inflation and Exchange Rate 28

Public Finances 29

Socioeconomic indices 30

2.6. Health care delivery system 30

a) National Level 31

b) District health system 31

2.7. Distribution and physical access to health facilities 32

2.8. Health status 33

2.9. Institutional framework for malaria control 34

Management procedures 35

CHAPTER III: MALARIA SITUATION ANALYSIS 36
3.1 History of Malaria Programme 37
3.2. Epidemiological profile 40
3.2.1 Malaria parasites 40
3. 2. 2 Malaria vectors 40
3. 2. 3. Population at risk and vulnerable groups 43
3.2.4. Dynamics of malaria transmission and level of endemicity 43
3.2.5. Malaria morbidity trends from 2000 -2014 45
Malaria morbidity/Burden 45
3.1.6. Malaria stratification and mapping 46
CHAPTER IV: REVIEW OF MALARIA STRATEGIC PLAN 2011-2015 51
4.1 Overview 51
Malaria Epidemiology 51
Malaria Programme Management and Leadership 52
Procurement and Supply Management 52
Integrated Vector Management 53
Malaria Case Management 53
Malaria in Pregnancy 53
Advocacy, Communication and Social Mobilization (ACSM) 54
Surveillance, Monitoring and Evaluation and Operational Research 54
4.3 Impact of the Ebola Virus Disease on malaria programme 56
4.4 Proposed Way Forward 58
CHAPTER V: MALARIA CONTROL STRATEGIC PLAN 2016-2020 59
Introduction 59
5.1. MSP guiding principles and social values 60
a) Universal coverage for all populations at risk with proven malaria interventions 60
b) Equity, equality and non-discrimination 60
c) Availability 60

d) Accessibility 60
e) Acceptability 60
f) Adequacy and Quality 61
g) Contiguous expansion of interventions 61
The SLMSP Social values 61
a) Evidence-led and forward looking 61
b) Pro-poor and sustainability 61
c) Partnerships 61
d) Primary Health Care 61
e) The Sierra Leone Basic Package of Essential Health Services (BPEHS, 2015) 62
f) Integrated health care delivery 62
g) Gender-sensitive and responsive health care, policy formulation and programming 62
h) Mainstreaming of health into other sectoral policies 62
i) Decentralization 62
5.2. Vision and Mission 62
5.2.1 Vision 62
5.2.2 Mission 62
5.3. Strategic Directions and Policy Priorities 63
5.4. Programme Policy Statements 63
Malaria Case Management 63
Intermittent Preventive Treatment (IPT) 63
Intermittent Preventive Treatment in Infants (IPTi) 63
Vector Control Measures 64
5.5. Goal and Objectives 64
5.5.1: Goal 64

5.5.2: Objectives 64

5.6 Strategic interventions 65

Strategy 1.1a: Ensure provision of diagnostics at public, private and community levels 65

Objective 1b: All malaria cases to receive effective treatment. 65

Strategy 1.1b: Ensure provision of effective treatment through the public and private sectors 65

Strategy 1.1c: Scale up and strengthen Community Case management of malaria 66

Strategy 1.1d: Strengthen capacity of monitoring the antimalarial treatment efficacy and safety studies 66

safety studies 66

safety studies 66

Objective 2a: Provide access to 100% of the population at risk with preventive measures by 2017 66

Strategy 2.1a: Universal Access to LLINs through mass distribution campaign; 67

Universal Access through routine LLINs (ANC and EPI) 67

Strategy 2.1b: Strengthen capacity in entomology, epidemiological surveillance, insecticide resistance monitoring and vector behaviour 67

Objective 2b: To protect at least 80 % of pregnant women and children under one year with IPT 3 by 2020 68

Strategy 2.2b: Delivery of Intermittent Preventive Treatment (IPT) 68

Intermittent Preventive Treatment for Infants (IPTi) 68

Objective 3: To provide knowledge to the population such that at least 80% practice malaria prevention and treatment measures by 2018. 68

Strategy 3.1: Advocacy, Communication and Social Mobilisation (ACSM) to scale-up demand for malaria prevention and treatment services. 69

Strategy 3.2; Strengthen behavioural change for malaria at all levels 69

Objective 4: By 2020, at least 95% of health facilities report routinely on malaria programme performance. 70

Strategy 4.1: Improve on malaria data collection and reporting through HMIS (public and community). 70

Strategy 4.2 Improve on data demand and use at all levels 71

Objective 5: By 2020, maintain and strengthen capacity for program management, coordination and partnership to achieve malaria programme performance at all levels..... 72

Strategy 5.1: Strengthen central, district and community levels advocacy for resource mobilisation across all sectors. 72

Strategy 5.2: Strengthen human resource development capacity and management to deliver malaria control interventions at all levels 73

Strategy 5.3: Strengthen procurement and supply chain management of malaria commodities 73

Strategy 5.4: Strengthen coordination and partnership 74

Strategy 5.5: Strengthen national capacity for developing evidence based malaria programming 74

Strategy 5.6: Rapid adaptation of programme preparedness and response in complex crises or unstable contexts 75

Risks and threats 75

CHAPTER V1: IMPLEMENTATION PLAN 79

6.1 Implementation Plan 79

6.2 Implementation and Implementation Management 82

Role of the corporate private sector for the malaria reduction efforts 83

Resource mobilization and financing..... 83

Improving capacity for procurement and supply chain management 84

CHAPTER VII: PERFORMANCE MEASUREMENT 85

7.1. Tracking implementation progress..... 85

7.2. Measuring and achievement of outputs, outcomes and impact..... 85

7.3. The Performance Framework..... 86

7.4 Strategic Plan Performance Framework 86

CHAPTER VIII: BUDGET AND FINANCIAL PLAN 87

ANNEXES 89

List of figures

Figure 1: Map of Sierra Leone 24

Figure 2: Sierra Leone: Distribution of available public health facilities hospitals (red), Health centers (blue) and Health Posts (green 33

Figure 3: Under Five mortality for malaria 34

Figure 4: NMCP organogram 35

Figure 5: Malaria control human resource plan 36

Figure 6: Map of study sites with observed failure proportions 38

Figure 7: Recorded malaria vectors by district in Sierra Leone 41

Figure 8: Site locations of mosquito sampling sites for 189 surveys undertaken between 1898 and 2012 42

Figure 9: Malaria Prevalence Model 43

Figure 10: Malaria prevalence among children 6-59 months: 44

Figure 11: Prevalence of malaria among children 6-59 months by residence, region and education 45

Figure 12: Prevalence maps showing malaria parasitaemia among children in 2000 and 2013: 45

Figure 13: Malaria incidence per 1,000 populations per year 46

Figure 14: Malaria mortality trends from 2000 -2014 46

Figure 15: Total number of LLINs distributed in 2004-2014 47

Figure 16: Sierra Leone: Indoor Residual Spraying (IRS) in 2011-2012 48

Figure 17: Usage of bed net and seeking Treatment: 48

Figure 18: Access to ACTs treatment by district 49

Figure 19: Use of intermittent preventive treatment (IPTp2+) by pregnant women 49

Figure 20: Mass Drug Administration for malaria in Sierra Leone 50

Figure 21: MDA coverage in two cycles of MDA in Sierra Leone 50

List of tables

Table 1: Basic Demographic data of Sierra Leone 26

Table 2: Socio-Economic Profile 30

Table 3: Summary of Strengths, Weakness, Opportunities and Threat analysis 55

Table 4: Risk Mitigation 76

Table 5: Implementation plan 79

Table 6: Budget summary by objective and interventions 87

Table 7: Budget summary by cost category 87

Table 8: Budget summary for combined commodity cost 88

List of Annexes

Annex 1: Participants for the development of the Malaria Strategic Plan 2016-2020 89

Annex 2: List of Participants by thematic groups 95

Annex 3: Table showing key players in malaria control 97

Annex 4: Malaria Programme SWOT analysis for various interventions 102

Annex 5: Detailed Performance Framework 107

Annex 6a: Trends in funding from 2000-2014 144

Annex 7: Financing-Government and External (2000-2014) 146

Foreword

One of the most important lessons our country has learned from the recent Ebola Virus Disease outbreak is that together, united, engaging all structures from community to the central level, with all of us pulling in the same direction, we can win even the most difficult of fights. We all know the price we paid for the freedom we enjoy today and it is for those lives we lost during the fight against the deadly Ebola Virus Disease that we dedicate all of our work, putting additional effort to rebuild the health system that will prevent, track and control the effects on our people, in the unfortunate event that we experience similar catastrophes.

Prior to the unfortunate EVD outbreak, the country was making progress on achieving the ideals enshrined in our Agenda for Prosperity, His Excellency's vision for the long term development of Sierra Leone. We were beginning to see the health sector's contribution to that broader national progress. We had made reductions in child mortality, reductions in malaria and other infectious disease, facilitated by innovations such as evidence based disease control interventions, community based interventions, Free Health Care Initiative for children under five, pregnant women and lactating women, Performance Based Financing, and many others. No doubt, the Ebola Virus Disease impacted and for some indicators reversed our hard-earned achievements. But we emerged on 07 November 2015, when the country was declared Ebola free, a nation with a purpose, a health sector with a mission to build back better and improve the lives of our fellow Sierra Leoneans.

The Ministry of Health and Sanitation, in collaboration with partners, developed the Health Sector Recovery Plan 2015-2020 and revised the Basic Package of Essential Health Services (2015). The National Malaria Strategic Plan 2016 – 2020 is aligned to the Health Sector Recovery Plan and aims to support the Ministry's goal to reduce inequalities and improve the health status of the people, especially mothers and children, through strengthening of the national and sub-national health systems.

It is important for all of us, donors, technical support agencies, NGOs and CSOs, to invest our scarce resources in high impact strategic interventions. The Malaria Strategic Plan 2016 – 2020 proposes a well-defined set of strategic high impact intervention areas that will make a significant difference in the health of our people and these should be prioritized when making funding and resource allocation decisions. My fellow Ministers of Health, the Chief Medical Officer and the Permanent Secretary stand ready to support all efforts by all stakeholders to advance the goals of this national reference document.

DR ABU B. FOFANAH
10 DEC 2015
MINISTRY OF HEALTH & SANITATION

Dr Abu Bakarr Fofanah
Honourable Minister of Health and Sanitation
Freetown, 10 December 2015

Chief Medical Officer's Remarks

Significant progress has been made in our collective fight against malaria guided by the expiring National Malaria Strategic Plan 2011-2015. Whereas malaria remains the leading cause of morbidity, it is no longer the leading cause of death in the country. There is reduction in malaria case fatality in children under five years, reduction in deaths attributable to malaria in health facilities, and reduction in deaths among pregnant women due to malaria. The average malaria parasite prevalence among children under five years is now 43% as indicated by the Sierra Leone Malaria Indicator Survey (SLMIS) 2013. Despite the progress made, malaria continues to impact negatively on the different demographic and socio-economic groups. For instance, children under five years and pregnant women are known to be relatively more adversely affected. Malaria imposes a heavy burden on our people, the health system and the national economy and this calls for all to do more to scale up and sustain its control. This will enable Sierra Leone to move towards the vision of "Access to Malaria Control Initiative for all".

The vision, mission, strategic objectives and core values articulated in this Sierra Leone Malaria Strategic Plan 20216-2020 have been discussed and agreed upon through a highly participatory and consultative country process with multi-sectorial stakeholders from government ministries and departments, private sectors, national and international non-governmental organisations, academia/research, local council authorities and other sub-national stakeholders.

A comprehensive malaria programme review (MPR) in 2013, the review of the epidemiological profile of malaria and its control in Sierra Leone and the effect of Ebola in Sierra Leone have all informed the development of this strategic direction, objectives and targets of this malaria control strategic plan. While the malaria control strategic plan builds on the lessons learnt during the previous malaria strategic plan 2011-2015, it also seeks to adopt bold actions to accelerate the nationwide scale up of cost – effective malaria control interventions, ensuring equity through community based and gender based approaches that focus on hard – to-reach communities within the strengthened health system.

I now call each and every one of us to make malaria control our business. We can only reach a point of elimination if collectively, we work together toward a common goal. The National Malaria Strategic Plan 2016 – 2020 provides a platform for us to pool our efforts to achieve our common goals.

Dr Brima Kargbo
Chief Medical Officer
Ministry of Health and Sanitation

Acknowledgement

The Malaria Strategic Plan 2016-2020 is developed on a greater determination to accelerate and scale up the actualization of malaria control in Sierra Leone.

The process of developing this strategic plan has been a long and painstaking exercise but very rewarding.

The National Malaria Control Programme of the Ministry of Health and Sanitation wishes to express our gratitude to the Honourable Minister of Health and Sanitation, Dr Abu Bakarr Fofanah, who approved, encouraged and guided the process. Similarly our thanks and appreciation goes to the Chief Medical Officer, Dr Brima Kargbo for his leadership and commitment to the development of this strategic plan. The support provided by the MOHS Directorates, Programmes, Units, DHMTs and Hospitals in the process of development of the plan is also acknowledged.

I wish to thank the World Health Organisation and the Roll Back Malaria Partnership for providing financial, strategic direction and technical assistance at all stages of the development of the SLMSP 2016–2020.

The support costs from the USAID through the Leadership, Management and Governance (LMG)/NMCP project is also acknowledged and appreciated.

I must acknowledge the invaluable contributions and commitment demonstrated by WHO International Consultants, Dr Peter Olumese, Dr Khoti Gausi, Dr Abderahmane Kharchi TFEIL at all stages of development of this plan.

Sincere gratitude goes to the national consultant, Dr Prince A.T. Roberts whose managerial and technical abilities have been brought to bear in the development of this important document.

I also want to thank the members of the Roll Back Malaria partners in Sierra Leone, Line Ministries, Departments and Agencies, Local Councils, International and National NGOs,as well as representatives of Civil Society Organisations.

As a national programme which is charged with the responsibility of malaria prevention and control, the commitment and contributions of its staff could not be overemphasized.

Finally, it is my fervent hope that this document will become the single most important point of reference on issues pertaining to the control of malaria in Sierra Leone for the next five years.

Dr Samuel Juana Smith
National Malaria Control Programme Manager
Ministry of Health and Sanitation

List of Abbreviations and Acronyms

ACT	Artemisinin Based Combination Therapy
BCC	Behavioural Change Communication
CHW	Community Health Workers
c-IMIC	Community – Integrated Management of Childhood Illnesses
DDT	Dichlorodiphenyl - Trichlorethane
DOT	Directly Observed Treatment
EPI	Expanded Programme on Immunisation
FANC	Focused Ante-Natal Care
FBO	Faith Based Organisation
GDP	Gross Domestic Product
GNI	Gross National Income
GFATM	Global Fund to Fight TB, Malaria and AIDS
HBC	Home Based Care
HIV/AIDS	Human Immuno-Deficiency Virus/Acquired Immunity Deficiency Syndrome
iCCM	Integrated Community Case Management
IEC	Information, Education and Communication
IHP+	International Health Partnership
IPT	Intermittent Preventive Treatment
IPT_i	Intermittent Preventive Treatment for infants
IPT_p	Intermittent Preventive Treatment for pregnant women
IRS	Indoor Residual Spraying

ITN	Insecticide Treated Net
IVM	Integrated Vector Management
LLIN	Long Lasting Insecticidal Net
M & E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MiP	Malaria in Pregnancy
MoH	Ministry of Health
MoHS	Ministry of Health and Sanitation
MSP	Malaria Strategic Plan
NGO	Non-Governmental Organisation
NMCP	National Malaria Control Programme
NMSP	National Malaria Strategic Plan
PMTCT	Prevention of Mother to Child Transmission
PPP	Public-Private Partnership
PPP	Purchasing Power Parity
RBM	Roll Back Malaria
RDT	Rapid Diagnostic Test
SLA	Service Level Agreement
SP	Sulphadoxine-Pyrimethamine
WHO	World Health Organisation

Executive summary

Malaria remains a serious public health challenge causing immense morbidity and mortality. It is a major impediment to socio-economic development leading to poverty.

Substantial malaria control investments have been made in Sierra Leone in the last decade in the context of the National Malaria Plans, 2004-2008, 2011 – 2015 and 2016-2020. The Malaria Strategic Plan 2016-2020 gives direction towards the improvement of the health status of the population and the fight against poverty by reducing the burden due to malaria.
Much progress has been made over the past years and there has been a decline in malaria cases and deaths. But there is a major challenge in sustaining funding in the current global financial crisis and a sustained financing plan needs to be developed through enhancing domestic resources.

This current Malaria Strategic Plan is from 2016-2020 and focuses on universal coverage access of malaria control interventions and calls for scaling up of these interventions. It calls for scaling up of these known cost-effective interventions for impact. As such, resources will be mobilised towards achieving the set goal, which should go a long way in ensuring that the country meets the target for the Action and Investment to defeat Malaria 201-2020(AIM) and the WHO Global Technical Strategy for Malaria share the timeframe of the Sustainable Development Goals.

The 2016 -2020 Sierra Leone Malaria Control Strategic Plan (MSP) was developed based on the recommendations of the malaria programme review 2013, recognition of the impact of malaria intervention and the Health Sector Recovery 2015-2020.

This MSP is aligned to the guiding principles of the broader National Health Sector Strategic Plan (NHSSP 2010-2015), Sierra Leone Health Recovery Plan 2015–2020, National Ebola Strategy for Sierra Leone 2015-2017 and the Basic Package of Essential Health Services 2010 (revised 2015). These principles are: universal coverage with proven malaria interventions, equity and equality and non – discrimination, participation and accountability and the right to the health elements of: availability, accessibility, acceptability, adequacy, quality and contiguous expansion of interventions.

It seeks further to harness the support of a broader range of stakeholders that includes health partners, multilateral and bilateral partners, research and academia, community members, parliamentarians, local council members, international and national NGOs, Civil Society Organisations, the media and other stakeholders. It defines strategies to be implemented to achieve the goal and objectives set for malaria control in Sierra Leone.

Vision, Mission, Goals and Objectives

Vision: The vision is to have an **"Access to malaria control interventions for all"**
Every Sierra Leonean has the right to access highly effective malaria preventative and curative services delivered as close to the households as possible through a "functional resilient national health system that delivers safe, efficient and high quality health care services that are accessible, affordable and equitable to all Sierra Leoneans.

Mission: To direct and coordinate efforts towards a malaria-free Sierra Leone through effective partnerships.

Goal

By 2020, reduce malaria morbidity and mortality by at least 40% compared with 2015.

Objectives

To achieve the above goal, the following objectives have been identified:

Objective 1a: All suspected malaria cases should have access to confirmatory diagnosis

Objective 1b: All malaria cases to receive effective treatment.
The MoHS endorses parasitological confirmation of malaria to be part of good clinical practice to improve the quality of care of patients. Before treatment is instituted, confirmation should be done using microscopy or Rapid Diagnostic Tests (RDTs) and prompt and effective treatment with ACTs.
The National Malaria Control Programme (NMCP) seeks to strengthen the capacity of health workers both in the public and private health sectors to implement the new Test, Treat and Track (T3) strategy by strengthening capabilities in prompt and targeted malaria case management; integration of quality assurance and quality control systems; incorporating malaria in pregnancy into the maternal and child health strategy; improving the procurement and supply chain for the commodities for malaria prevention and treatment; proactive engagement of the private sector in malaria control, as well as community participation in diagnosing, treating and reporting malaria cases.

***Objective** 2a:* Provide access to 100% of the population at risk with preventive measures by 2017

***Objective 2b**:* To protect at least 80 % of pregnant women and children under one year with IPT3 by 2020
This strategic plan proposes to use three vector control strategies; Long Lasting Insecticide Treated Nets (LLINs), Indoor Residual Spraying (IRS) and Larval Source Management (LSM) will be deployed according to the current risk stratification context. For LLINs, universal coverage for LLINs mass campaign is planned for by June 2017. Mass distribution campaigns will be repeated every three years and continuous LLIN distribution through ANC and EPI will be done nationwide to maintain high levels of coverage during the entire period of the strategic

plan. Strengthened Public-Private partnership will serve as an opportunity for resource mobilization to scale up implementation of IRS as recommended by WHO. Another crucial component of the Integrated Vector Management will focus on reduction of larval sources through larviciding and environmental management targeting the 14 health districts.

Objective 3: To provide knowledge to the population such that at least 80% of the population practices malaria prevention and treatment measures by 2018.

Implementation and coordination of this multi-sectoral malaria control strategy by the Ministry of Health and Sanitation (MoHS) will require a more vibrant BCC approach. Civil Society Organizations (CSOs) and Community Based Organizations (CBOs) will to empower and encourage communities to demand for services, know their health rights, and accountability from duty bearers therefore increasing utilization and value for money.

Advocacy, social mobilization and Information Education (IEC) will be driven by the understanding of changing models that emphasize engagement with various participant groups and strengthen empowerment of households and communities to adopt appropriate behaviour. Activities will seek to reduce malaria morbidity and related mortality by motivating every Sierra Leonean to take recommended actions to prevent, diagnose and treat the disease and to bring about sustainable social and individual behavioural change. It acknowledges challenges in the areas of prevention and vector control, malaria in pregnancy, malaria in infants and case management and proposes strategies for effective communication with relevant stakeholders.

Objective 4: By 2020, at least 95% of health facilities report routinely on malaria programme performance.

This objective focuses on achieving at least 95% of health facilities reporting routinely on malaria programme performance. All districts will be expected to report routinely on malaria programme performance. All the districts have DHIS2 and District Monitoring and Evaluation Officers. At this level, all data from the lower level health centres including the community are compiled and inputted into health database using DHIS2 software which is electronically transmitted to the National level. Secondly, most of the implementation of routine interventions takes place at the district level where activity reports are collected. Thirdly, partners implementing at district level should generate reports and submit them to the district. The district structures will be strengthened to ensure that all HMIS data and activity reports are collected, collated and analysed at all levels. All malaria policies will be guided by coordinated operational research on malaria. To monitor the progress attained and aide planning, regular monitoring through program reviews and surveys will be given a high priority

Objective 5: By 2020, maintain and strengthen capacity for program management, coordination and partnership to achieve malaria programme performance at all levels.

The National Malaria Control Programme is expected to have more challenging issues that will need to be addressed during this period 2016-2020. Some of these include new innovative tools such as malaria vaccine that are expected to be introduced after recommendations are passed for

implementation in the country. This will require a level of readiness for its adoption, if it is to be implemented. There are also other innovative tools in diagnosis, treatment and vector control that may be introduced during this period.

The core values for this MSP are: accountability for outputs, excellence, technical empowerment, efficiency, value for money and multi-stakeholder involvement. The MSP will support reforms to facilitate better monitoring of efficiency and value for money in delivering a comprehensive package of integrated services for malaria control to a value for money framework of three 'E's plus 'C'. The four major questions that the government and all implementing partners of the SLMSP will need to ask and provide for are:

1. Economy – Are the input for our programme of the right quantity, quality and the right price?
2. Efficiency – How well do we convert inputs into outputs?
3. Effectiveness – How well are the outputs achieving the desired outcomes?
4. Cost effectiveness – How much impact is achieved relative to the inputs?

Anticipated risks

The anticipated risks that should be mitigated for the successful implementation of the SLMSP are**:**

Case Management • Health providers' (public and private) behaviour is one of the important risks to case management for non-compliance with the policies and guidelines. Despite continued drive to encourage testing before treatment most providers give medications based on clinical symptoms only; • Non adherence to negative test result is also a major risk since this leads to over consumption, misuse of antimalarials and misdiagnosis for other ailments. • Failure to engage the private sector despite its potential.
Case Management: Community level • The rolling out of diagnosis to the community level using RDTs may be fraught with human capacity challenges due to attrition of CHWs who are essentially volunteers.
Financial • Weak financial accounting software. • Weak Management of physical assets' • Inadequate insurance of assets. • Inadequate funding for comprehensive implementation of interventions.
Surveillance, Monitoring and Evaluation • The collection of district level (DHMT) data via DHIS2 is threatened by incompleteness and timeliness; • Lack of backup systems for data at DHMT and hospitals. • The collection of district level hospital (private and public) data is threatened by

incompleteness and timeliness; • Stock out of data collection and reporting tools at service delivery point; • Supervision and monitoring of activities are uncoordinated and irregular mainly at district level; • Inadequate performance reviews, clinical audits, trainings, quality control/assurance; • Failure to improve the quality of data use for planning
Long Lasting Insecticide Treated Net: • The failure of LLINs users to sleep under their LLINs; • Absence of insecticides resistance monitoring of LLINs in the presence of large scale use of insecticides for malaria control; • Increasing resistance to insecticides.
Programme management: • Reliance on external donor funding puts this plan at risk not fulfilling its accelerated malaria control efforts especially with the Global Fund's new funding models; • Failure to use the decentralised structure at district and chiefdom levels; • Fragmented programming and implementation;
Procurement and supply chain issues: • Stock out of antimalarial commodities at service delivery point; • Over stock and expiry of antimalarial health products; • Theft and diversion. • Inadequate storage facilities.
Human resource • This plan rides on the success of the health system but there are shortages of skilled staff at all levels.
IEC/BCC • Inadequate scope and scale of IEC/BCC.
Recurrence of Ebola virus disease outbreak: • Evidence shows that countries that have experienced the EVD outbreak have had resurgence of the virus. The country is very aware of this possibility.
• Partners not aligned to the plan.

Monitoring of the SLMSP

The performance framework for measuring progress in the implementation of the SLMSP has been articulated in detail as presented in the revised Malaria Monitoring and Evaluation (M&E) Plan. The following will be the main functions of the M&E:

1. Tracking progress for the programme in implementing the specific components of the full package of malaria control interventions; and
2. Tracking in meeting targets and milestones.

The methods for tracking of programme actions are fully detailed for impact, outcome, output, process and inputs. This data will use a variety of data platforms, including: routine HMIS, population – based household surveys (DHS and MIS), health facility surveys, the IDSR system, special studies, drugs and resistance studies among others. Information will be complied and synthesised and feedback provided to all stakeholders. Expanded RBM partnership forum reviews to be conducted monthly; A mid-term review to be conducted in 2018 and an end – term review/evaluation in 2020.

Implementation Plan

The implementation of this strategic plan will be in compliance with the established policy, regulatory, institutional, planning, financing and M&E framework. The implementation will be guided by the stated implementation principles and supported with identified coordination mechanism. In addition to specifically prevent and control malaria, the strategic plan looks towards strengthening the health system and community system. Thus, implementation will be based on adherence to the 3 ones; health sector leadership – responsiveness to broader health system context and tailoring priority investments on high impact interventions responsive to the epidemiological context.

Malaria control in Sierra Leone requires a fully inclusive multi-sectioral partnership control. The MoHS has statutory responsibility for malaria prevention and control and will lead the multi-sector response to malaria. The NMCP under the MoHS will coordinate the following: development of norms, standards, policies, guidelines and tools; planning; resource mobilisation and management; capacity building including technical support; monitoring and evaluation and operational research

This strategic plan will be implemented through a broad nationwide collaborative coalition by all stakeholders who will participate within the framework of the malaria strategic plan 2016-2020. A working arrangement will be used to strengthen "bottom top" approaches to foster decentralisation of service delivery at district and chiefdom levels to increase efficiency, effectiveness and equity. Coordination and supervision of the implementation will be through the national established partnership framework.

Success in the implementation of this strategic plan is predicted on the transparency and involvement of a broad range of stakeholders at household, community, district and national levels. The traditional institutions, civil society groups, village health committee, religious groups, women's support groups, youth groups among others shall also be involved in the drive towards controlling malaria.

Core components of the implementation framework will include resource mobilisation, financing programme coordination and management, service delivery for effective malaria control and evidence based decision making. The overarching philosophy will be that of additionality of resources and complementarity of partnership activities to deliver on common goals.

Summary Budget

The cost of the NMSP 2016-2020 is USD 125,938,013.81

This consists of cost of Commodities, Procurement fee, freight and insurance cost.

CHAPTER I: BACKGROUND

1.1. Introduction

The Government of Sierra Leone recognises malaria as a health and socioeconomic burden as articulated in the National Health Sector Strategic Plan (NHSSP 2010-2015), Sierra Leone Health Recovery Plan 2015–2020, National Ebola Strategy for Sierra Leone 2015-2017 and the Basic Package of Essential Health Services 2010 (revised 2015).

Malaria is endemic in Sierra Leone with stable and perennial transmission in all parts of the country. Malaria is presently the leading cause of morbidity and mortality amongst children under five years of age. Although pregnant women and children under 5 are mostly affected, the entire population is risk of malaria. Malaria accounts for 40.3% of outpatient morbidity for all ages. Accounts for 47% of outpatient morbidity for under five children and accounting for 37.6% for hospilisation with a case fatality of 17.6% (sources).

Malaria and poverty are closely linked. Malaria is concentrated in low income and lower income countries. Within these countries, the mostly severely affected communities are those that are the poorest and most marginalised. Such communities have the highest risks associated with malaria, and the list access to effective services for prevention, diagnostics and treatment.

Malaria is a major threat to socio-economic development of the country with an estimated 7-12 days lost on the average per episode of malaria. It imposes substantial costs to individuals, households and governments. The cost to individuals and their family includes purchase of drugs for treating malaria at home; expenses to travel to and seek treatment at dispensaries and clinics; lost days of work; absence from school; expenses for preventive measures; expenses for burials in case of deaths. Households in Africa spend between $2 and $25 (USD) on malaria treatment and between $15 and $20 on prevention each month with consequent loss of resources or 3% of annual income. The amount spent on malaria in terms of prevention, treatment and loss of productivity can compromise significant portion of annual income of poor households.

Furthermore, severe malaria impairs children's learning and cognitive abilities by as much as 60%, consequently affecting the performance of Sierra Leone's universal primary and secondary education programmes.

This Sierra Leone Malaria Strategic Plan covers the 2016-2020 period. The plan stipulates priority interventions, outlines the strategic direction and the investments required for achieving the 2020 national goals. The strategic plan also outlines how the stakeholders in malaria control

will organize themselves in achieving the objectives and goals set herein as informed by the midterm review and the other related strategic documents.
In addition this plan will be a resource mobilization tool and will provide a common framework for the accelerated nationwide scale up of evidenced-led malaria reduction interventions by the government, its development partners, the private sector and all stakeholders.

1.2. National and international context and commitments

The health sector has to be viewed within the broad historical context of poverty and a high illiteracy rates in Sierra Leone (43%). Sierra Leone is recovering from multiple disasters: the civil war (1990–2002); the cholera epidemic (2012); and the EVD outbreak (2014-2015). The country was deemed to have "not attained the minimum International Health Regulations core capacities by 2012". Nevertheless, prior to the EVD outbreak in mid-2014, Sierra Leone had made substantial progress towards a number of the Millennium Development Goal targets in the health and nutrition sectors, including a reduction in child and maternal mortality and improving coverage with a range of critical interventions such as malaria control, antenatal care, skilled birth attendance and immunization.

The recent national Malaria Indicator Survey (2013) and the Demographic Health Survey (2013) also demonstrated major improvements in malaria control. Framed alongside commitments articulated in the national development plans, the National Health Strategic Plan 2010–2015, the Health Sector Strategic Plan 2015-2020, Free Health Care 2010, the Basic Package of Essential Health Services 2010 (Revised 2015), the National Health Compact 2011 and the Service Level Agreement (2015) provide the overall guidance for health system strengthening and for improving the health status of the population. Health policies, programmes and coordinating structures, such as the Health Sector Coordinating Committee chaired by the Minister of Health and Sanitation, do exist, galvanizing cooperation among health, environment and development partners in the country.

The Sierra Leone Malaria Strategic Plan (SLMSP) shall follow the principles of the Paris Declaration and the Accra Agenda for action for Aid effectiveness through the International Health Partnership (IHP+) in the interaction and collaboration with national and international development partners as embedded in the health sector strategic plan.

Malaria control has remained a priority action within the national health agenda in Sierra Leone. The country has favourable policies to ensure that malaria is controlled in the country. User fees were abolished in all public and few private health facilities making treatment free for malaria cases and government taxes on Long Lasting Insecticides Treated Nets (LLINs), medicines and laboratory supplies were also waived in 2005. Furthermore, the government is committed to the 2006 World Health Assembly (WHA) resolution to withdraw Artemisinin monotherapy. At the highest level, His Excellency the President is an active member of the African Leaders Malaria

Alliance (ALMA). In order to ensure that malaria control is on the national agenda, a Parliamentary Health Committee was formed. The country has embraced global and regional commitments in malaria prevention and control. The African Union Heads of State jointly stated their commitment in 2000 during the Abuja Declaration, calling for "Universal Access" to HIV/AIDS, Tuberculosis and Malaria services by 2010. All policies and strategic plans have always been aligned to the World Health Organisation (WHO) guidelines, Roll Back Malaria (RBM) and Millennium Development Goal (MDG) targets. Following the United Nations Secretary General's call for 100% coverage of malaria control interventions and the elimination of malaria as a threat to public health, the government of Sierra Leone has moved from targeting of malaria control interventions to universal coverage.

1.3. The Process of Developing the National Strategic Plan

A participatory approach that is fully aligned with the WHO recommendations for development of strategic plans was adopted. The National Malaria Control Strategic Plan 2016-2020 was developed following the findings and recommendations from the Malaria Programme Review (MPR) that was conducted in 2013.

This strategic plan has been discussed and agreed upon through a participatory and consultative process with multi-stakeholders, including government ministries and departments, development partners, the private sector, national and international organisations, research/academia, local authorities, community based organisations and other sub-national stakeholders.

A stakeholder meeting was conducted to share the draft plan for their inputs. The document went through a joint assessment and review by various external and internal resource persons. Following the joint assessment, presentations of the findings were made at a stakeholders meeting where additional inputs were made. The document further underwent a peer review process under the auspices of RBM/WHO.
Finally, this plan has also been reviewed and approved by top management of the Ministry of Health and Sanitation.

Costing of the strategic plan was done using the customised Global Fund Budget template following orientation processes that was conducted for the SLMSP team.

CHAPTER II: COUNTRY PROFILE

2.1. Overview

Sierra Leone is located on the West Coast of Africa, between latitude 8 30° north and longitude 11 – 30° west. It is bounded by Guinea on the North and East, and Liberia on the South –East. The Atlantic Ocean forms a beautiful coastline to the south and west of the country.

Sierra Leone covers a total area of 71,740 km2 (27,699 sq. ml) with a coastline of 402 km. It has a maritime claim of territorial sea equivalent to 200 nautical miles (370.4 km; 230.2 miles). Sierra Leone's continental shelf is 200 metres in depth. The projected population for 2015 is 6,506,424 with 57.5% 1of the population living in the rural areas.

The country has a varied terrain, ranging from coastline swamps, through inland swamps and rain forest to one of the highest mountains in West Africa, the Bintumani at 2200m. The secondary palm-bush is the main vegetation and it is interspersed with numerous swamps that are mostly cultivated for rice. These swamps provide ideal breeding places for the anopheline vectors of malaria. The coastal line of the country has several mangrove swamps, which provide the breeding sites for *anopheles melas* mosquitoes, which is one of the major vectors of malaria besides *anopheles gambiae* and *anopheles funestus*.

Figure 1: Map of Sierra Leone

The country has a typical tropical climate with temperature ranging from 21°C to 32°C with a mean daily temperature of 25°C. It has two major seasons; the wet season (May to October) and the dry season (November to April) with heavy rains in July and August. It has an average rainfall of about 320cm annually. Relative humidity is high ranging from 60 to 90%.

Sierra Leone is a democratic state with a presidency, cabinet, parliament and an independent judiciary. Administratively, the country is divided into four major areas, namely Northern, Southern, Eastern regions and the Western area where the capital Freetown is located. The regions are divided into 14 Health Districts (see figure 1) and 149 chiefdoms. There are District/City Councils consisting of a district chairman, mayor,

councillors and administrators who administer the districts; while the chiefdoms are governed by locally elected paramount chiefs. With recent decentralization, the country has been divided into 19 local councils that have been further sub-divided into 392 wards. Each ward is headed by an elected councillor.

The statistics bureau of Sierra Leone estimates the population as 6,507,059 (MoHS projected population, 2015). The capital city, Freetown, with an estimated population of 1,066,910, is the largest city and serves as the economic, commercial, educational and cultural centre of the country. Bo, to the Southeast part of the capital, is the second largest city with an estimated population of 256,553. Other cities/towns with estimated population of over 100,000 people are Kenema, 182, 106, and Makeni 128,656 to name but a few.

Sierra Leone's protracted civil conflict, which ended in 2002, eroded vital infrastructure and human capacity. This has resulted in a range of social and economic challenges. The Gross National Income (GNI) per capita (current dollar, purchasing power parity (PPP)) is $1,690 while the GDP growth rate was 6% in 2013.

Sierra Leone has a youthful population with women of child bearing age accounting for 24% and 41.7% of young children respectively. 43% of the population older than 15 years is literate, and life expectancy at birth is just 45 years (World-Bank 2015). The Human Development Index rank for Sierra Leone is 177 out of 187 countries[2].
Total health expenditure is approximately $95 per capita – of which 13% comes from donors, 16% from government, and 76% from private out-of-pocket household contributions (Government-of-Sierra-Leone 2010; WHO 2014). Government expenditure on health as a percentage of total government expenditure is just 12.3%, approaching the 15% target of the Abuja Declaration[3]. Major external supporters of the health sector include The Global Fund to Fight AIDS, TB and Malaria (The Global Fund), the UK Government (UKAid), European Union (EU), African Development Bank (ADB), and GAVI[4].

2.2. Socio-Political system

Administratively, the country is divided into four regions, namely Northern, Southern, Eastern and Western area, where the capital Freetown is located. The regions are divided into 14 Districts and 149 chiefdoms. There are District Councils consisting of a district chairman, administrators and councillors who administer the districts; while the chiefdoms are governed by locally elected paramount chiefs. With recent decentralization, the country has been divided into

[2] *UNDP (2014). Human Development Report. New York, UNDP*
3 Ministry of Health and Sanitation (2015). National Health Accounts, 2015
4 WHO (2014). "Sierra Leone Country Profile

19 local councils that have been further sub-divided into 392 wards. Each ward is headed by an elected councillor.

The Government of Sierra Leone (GoSL) has been implementing a decentralization program as a way of improving the efficiency and effectiveness of service delivery since 2004. These programmes are guided by the Constitution of Sierra Leone (1991) and the Local Government Act (2004). Services are decentralized to districts and within districts to chiefdoms with each level having specific roles and responsibilities.

2.3. Demographic Characteristics

Table 1: Basic Demographic data of Sierra Leone

Indicator	Latest Estimated Value(See sources*)
Population: Total	6,348,350[1]
Population: under five years	1,048,747 (16.52%)[1]
Population: pregnant women	279,327 (4.4%)[1]
Life expectancy at birth	57.39 years of age
Population growth rate	2.33 %[1]
Population of children under 15 years	41.9%[1]
Crude birth rate	37.4 births per 1000 population UNDP
Crude death rate	11.03 deaths per 1000 population
Infant mortality rate	92 deaths per 1,000 live births[3]
Under five mortality	156 deaths per 1,000 live births[3]
Maternal mortality ratio	1,165 deaths per 100,000 live births[3]
Anaemia among children under five	80%[3]
Anaemia in women (15-49 years)	45%[3]
Anaemia among pregnant women	54%[4]
Children under five who slept under an Insecticide Treated Net (ITN) the night before the survey	45 %[4]
Pregnant women age 15-49 who slept under an Insecticide Treated Net (ITN) the night before the survey	47 %[4]
Last births in the five years preceding the survey for which the mother took antimalarial drugs for prevention during pregnancy	45.1%[4]
Last births in the five years preceding the survey for which the mother got Intermittent Preventive Treatment (IPT) during an antenatal visit	61.7%[4]
Children under five with fever (in two weeks preceding the survey) who took antimalarial drugs	44.1%[4]
Children under five with fever (in two weeks preceding the survey) who took antimalarial drugs the same day/next day after developing fever	37.4%[4]
Children under five with symptoms of ARI who sought treatment from a health facility/provider (excludes	71.7%[4]

Indicator	Latest Estimated Value (See sources*)
pharmacy, shop, and traditional practitioner)	
Children under five with fever who sought treatment from a health facility/provider (excludes pharmacy, shop, and traditional practitioner)	35.9%[3]
Urban dwellers	38.4%[2]
Rural dwellers	61.6%[2]
Total fertility rate	4.9%[3]
Literacy rate (those aged 15 years and above)	43.3%[5]
Health expenditure	13.1%[6] (national Recovery Plan)
Physician density	0.016[6] Physicians/1,000 population

[1] Statistics Sierra Leone 2004
[2]UNDP2010
[3]DHS 013
[4] MIS 2013
[5]UNDP 2011
[6]National Recovery Plan 2015-2020

2.4. Ecosystem, environment and climate

The country has a varied terrain, ranging from coastline swamps, through inland swamps and rain forest to one of the highest mountains in West Africa, Bintumani at 2200m. The vegetation is mainly secondary palm-bush, interspersed with numerous swamps that are mostly cultivated for rice. These swamps provide ideal breeding places for the Anopheline vectors of malaria. Moreover, the coastal line has several mangrove swamps, which provide the breeding sites for *Anopheles melas* mosquitoes, which is one of the major vectors of malaria besides *gambiae* and *funestus*.

2.5. Socio-economic situation

There had been a remarkable economic recovery in the post-conflict period with real GDP (including iron ore mining) growing at double digit rates in recent years prior to the EVD outbreak. The real GDP growth (inclusive of iron-ore GDP) was 15.2% in 2012 and 20.1% in 2013, and was projected to reach 11.3% in 2014. This robust economic growth was accompanied by tight monetary policy that reduced inflationary pressures. The country enjoyed a stable macroeconomic environment with moderate macroeconomic risks, indicated by falling consumer prices, declining domestic interest rates, stable exchange rate and with moderate risk of debt distress[5]. Inflation continued its downward trend and returned to single digit (year-on-year) of 6.39% by April 2014 from 11.4% in December 2012. Interest rate on Government securities declined sharply in 2013. The 91-day treasury Bills rate fell to 3.45 in December 2013 from 18.99% in December 2012. Gross foreign exchange reserves at the Central Bank reached US$475 million, equivalent to 3.0 months of imports as at end December 2013 compared to US$420 million in December 2012. Over the last five years, substantial foreign investment was

made in the extractive industry, agriculture, energy, and tourism sectors and are expected to further boost the economy. According to Fragility Report of 2012, Sierra Leone made rapid progress from a fragile state to a more stable development path.

Incidence of poverty declined from a high value of 66.4% in 2003 to 52.9% in 2011. The Human Development Index (HDI) increased from 0.329 in 2005 to 0.374 in 2013 reflecting progress in health, education and income dimensions of HDI[6]. However, unemployment rates remain high, especially among the youth and women. Low participation of women in the economy remains an issue. Sierra Leone is ranked 139 out of 149 in gender inequality index for 2013 (HDR 2014).
Sierra Leone's private sector was already weak prior to the Ebola crisis, and hampered by a poor business environment. The private sector's engagement in the development of livelihoods and employment opportunities has been limited due to insufficient promotion of Public Private Partnership (PPP) and other Corporate Social Responsibilities (CSR). High population growth rates are resulting in increasing demand for renewable and non-renewable natural resources.

Although the country made progress towards achieving the MDGs, according to the government progress report for 2010, only MDG 6 related to HIV/AIDS, Malaria and TB was likely to be achieved by 2015. However, this has experienced substantial setbacks due to the negative impacts of the EVD crisis.

Inflation and Exchange Rate

The closure of markets ("*lumas"*), internal travel restrictions, and the resultant difficulty in the distribution of farm produce resulted in commodity price spikes. Market data indicates price spikes for staple food commodities such as rice, whose price went up by 30 percent countrywide, although there was no discernible increase in food inflation on a national basis over the second half of 2014. The national inflation rate, which had fallen from 8.2 percent at the end of 2013 to 6.4 percent at the end of April 2014, rose to 7.9 percent at the end of January 2015.

About 65 percent of business establishments attributed the "limited availability of raw materials and resale difficulties" to the rising level of general prices. The depreciation in the exchange rate contributed to the rise in inflation. The exchange rate, which had been stable between 2012 and the first half of 2014, depreciated by 13.5 percent in the second half of 2014 due to foreign currency demand pressures arising from Ebola-related uncertainties and essential imports (food, pharmaceutical and petroleum products), but also from the demise of iron ore production and exports late in the year, a sharp decline in foreign investment inflows, and maintenance of very low government security yields.

To meet the increased demand for foreign currency, the Bank of Sierra Leone increased its weekly sales of forex from US$0.5 million in June to US$3 million in October, and carried out five wholesale forex operations between September and December 2014 amounting to US$30 million. Nevertheless, EVD-related donor inflows, including International Monetary Fund (IMF)

extended credit facility support, supported central bank foreign exchange reserves, which steadily increased over the second half of 2014 and into 2015. With the demise of the iron ore sector and large financing requirements for the post-EVD recovery programme, continued donor inflows will be required to support the currency over 2015 - 2016.

Public Finances

While there was some moderate fiscal slippage over the first half of 2014 due to some spending overruns and shortfalls in revenue and grants, resulting in an accumulation of unpaid bills totaling about 1 percent of non-iron ore GDP, the onset of EVD greatly accelerated fiscal pressures. By the end of 2014, tax revenues were down 1.5 percent of GDP and tax arrears had mounted significantly. Fiscal expenditure also declined by just over 1 percent of GDP, but higher current outlays due to higher EVD related expenditures and a higher wage bill (mainly for sub vented agencies) were offset by much lower capital expenditure. The total fiscal impact in 2014 was estimated at US$130 million, which occurred through two channels:

- Firstly, the slowdown in economic activity and weaker tax compliance adversely affected domestic revenue collection. Total revenue collected in 2014 was US$90 million below the pre-Ebola projection. The deterioration in international prices of iron ore also weakened revenues at year end. In all, state revenue loss since the beginning of the outbreak is estimated at Le350 billion (US$74 million).
- Secondly, government current spending increased, with public funds the first line of resources for the Ebola response. In total, the government allocated US$27 million (2.8 percent of expenditure) in 2014 to fund Ebola-related activities. It is notable that public servants have continued to be paid throughout this period at the increased rates announced in the 2015 budget. Areas where government spending has declined include domestically funded capital projects (down by around 14 percent of the planned budget) and foreign-financed capital projects (down by 40 percent of the budget) as contractors and international technical assistance ceased work and left the country.

Scaled-up budget support from development partners – including the African Development Bank, World Bank, European Union and IMF – through the Extended Credit Facility and access augmentation played a critical role in covering the financing gap. All outstanding bills were cleared at the end of 2014, and advances from the central bank were reduced substantially below prescribed limits. While these actions ensured that the budget was adequately financed for 2014, huge challenges were expected to emerge in 2015 and subsequent years.

Over 2015, revenues are expected to remain weak, reflecting the economic slowdown (particularly in the iron ore sector, which is unrelated to the EVD crisis), lower commodity prices and associated investment flows, and ongoing compliance challenges exacerbated by EVD. In contrast, fiscal expenditure to achieve and maintain zero infections and for the post-Ebola recovery efforts and resumption of the existing public investment programme is significant. Accordingly, in line with ongoing IMF programmes and the commitments made

following the Heavily Indebted Poor Countries debt forgiveness process, the government remains committed to limiting debt financing and maintaining fiscal sustainability, despite the EVD spending requirements and the collapse of the iron ore sector.

Under the IMF programme formalized in April 2015, the fiscal deficit in 2015 is projected to decline to 3.6 percent of GDP from 3.8 percent in 2014. Estimates of external financing and contributions to the Ebola response amount to US$381 million, while domestic financing is set at around US$90 million. Should resumption of iron ore exports from the larger iron ore mine fail to occur from mid-2015 and if zero EVD infection rate is not achieved by the second quarter of 2015, then the fiscal deficit and its financing requirements could widen further.

Socioeconomic indices

The country is grouped among the least developed countries in the world, ranking 180 out of 182 countries in the UNDP Human Development Index for 2009[5]. Table 2 shows the socio-economic profile of Sierra Leone by year and source of estimate.

Table 2: Socio-Economic Profile

Indicators	Percentage	Source
Economic growth rate	2%	MFoED
GDP Per Capita	US$679	2009, HDI
External debt burden	NA	June 2010
Population in severe poverty	53%	2007, World Bank
Population with access to sanitary facilities	13%	NHSSP 2010-2015
Population with access to safe drinking water	54%	DHS, 2008
Adult Literacy rate	38.1%	2009, HDI
Employment rate	19.8%	Census 2004

Massive population displacement in the rural areas during the war led to accelerated urbanization, resulting in severe overcrowding in towns and cities. The literacy rate is less than 40%. More than half of the population lives on less than US$1 a day. The economy is, however, making a modest recovery, and there is a gradual improvement in security in rural areas.

2.6. Health care delivery system

The Sierra Leone constitution provides the administrative context for the organization of health services. The government has the responsibility for the delivery of health services, recruitment and management of the health personnel at all levels. In addition, the government is also responsible for the development and passing of health related laws, planning, budgeting, resource mobilization and allocation.

[5] UNDPs Human Development Index, 2009

The health system is organised in a tiered manner, with the following levels: hospitals, community health centres, community health post, maternal and child health post and community level. There are national and district referral hospitals, whilst government health facilities in the district health system consist of hospitals and peripheral health units (PHUs) and community units.

In addition, the health system is comprised of public and private services, that operate on either profit or non-for-profit basis e.g., non-governmental organizations (NGOs), Government run public services account for approximately 80% of health service utilization.

a) National Level

The MoHS provides a leadership role and is responsible for delivering the outputs of all strategic plans for the health sector. It has the mandate to develop and implement policies and programmes as well as undertake other necessary actions that will strengthen the national health system to deliver effective, efficient, quality and affordable health services that foster improved health status of Sierra Leoneans. Improved health status of the population will serve as the engine of pursuit of accelerated economic growth and sustained development. Other stakeholders have defined roles to play in the implementation of the strategic plans.
The core functions of the MoHS at the central level are policy formulation; standards setting and quality assurance; resource mobilization; capacity development and technical support; provision of nationally coordinated services; coordination of health services; monitoring and evaluation of the overall sector performance and trainings.

b) District health system

The district health system (DHS) encompasses both public and private hospitals, peripheral health units and community health programs. The District Health Management Teams (DHMTs) are responsible for the implementation of the national health policies, planning, coordination and management of health service delivery in collaboration with stakeholders.

The country is served by a network of 1,264 public and private health facilities, including 40 hospitals. The health system is organized into three tiers of care: Peripheral Health Units (PHU) with the extended Community Health Worker (CHW) programme; District Hospitals; and Referral Hospitals. There are a total of 40 hospitals in the country, of which 23 are government owned with the rest owned by private, non-governmental and faith based organizations. Making districts functional and resilient requires a BPEHS that ensures continuum of care for delivery of quality of services – with smooth referral from PHUs to hospitals as needed.

The **Community Health Workers** programme was solidified by the development of a national community health worker policy in 2012. At the time of developing the 2015 – 2020 post Ebola Recovery Plan, there were nearly 13,000 CHWs trained and supported by MoHS and partners[7]. CHWs operate at the community level and provide a range of services including integrated community case management (iCCM), growth monitoring and nutritional counselling,

counselling on family planning and distribution of family planning commodities, and other non-clinical services in the country.

First line PHUs are further sub-classified into three levels:
Maternal and Child Health Posts (MCHPs) are situated at village level for populations of less than 5,000. They are staffed by maternal and child health (MCH) aides who are trained to provide: antenatal care, supervised deliveries, postnatal care, family planning, growth monitoring and promotion for under-five children, immunisation, health education, management of minor ailments, and referral of cases to the next level. The MCH aides are supported by a network of volunteer community health workers (CHWs). The updated Basic Package of Essential Health Services (2015) prioritizes improving the quality of health care delivery with special emphasis on high impact maternal and child health interventions and observance of universal precautions.

Community Health Posts (CHPs) are at small town level with populations of between 5,000 and 10,000 and are staffed by State Enrolled Community Health Nurses (SECHNs)/midwifes and MCH aides. They provide the same types of services that are provided at the MCHPs but they also include prevention and control of communicable diseases and rehabilitation. They refer more complicated cases to the next level of health care, the Community Health Centres.

Community Health Centres (CHCs) are located at Chiefdom level, usually covering a population ranging from 10,000 to 20,000 and staffed with a Community Health Officer (CHO), SECHN, MCH aides, an Epidemiological Disease Control Assistant and an Environmental Health Assistant. They provide all the services provided at the CHP level in addition to environmental sanitation and supervise the CHPs and MCHPs within the Chiefdom. At the time of the health sector recovery planning, five CHCs in each district were being upgraded to BEmONC certification.

2.7. Distribution and physical access to health facilities

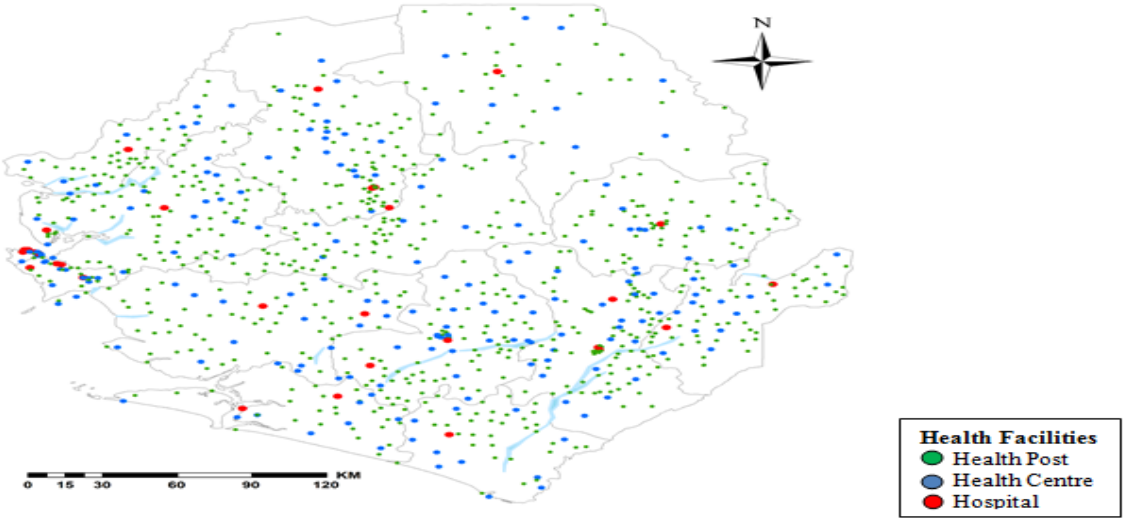
The country is served by a network of 1,264 public and private health facilities, including 40 hospitals; of which 23 are government owned with the rest owned by private, non-governmental and faith based organizations. There are 1,185 peripheral health units across Sierra Leone: 577 MCHPs (49% of all PHUs), 343 CHPs (29% of all PHUs) and 265 CHCs (22% of all PHUs). In 8 out of 14 districts, MCHP constitute more than 50% of PHUs, in particular in Port Loko (64%), Tonkolili (73%), Pujehun (64%), Bo, Moyamba, Kono (55%) [8].

The Basic Package of Essential Health Services (BPEHS) specifies a prioritised but limited package of high impact and cost effective interventions that should be available to every individual to address the major causes of death and diseases in Sierra Leone.

The BPEHS is a critical starting point for this strategic plan and thus the post Ebola health sector recovery plan. This BPEHS defines the package of services that should be available at each level of care, and implies that a minimum requirement of skilled health staff, essential drugs and supplies and related technical and management competencies will also be present.

Making districts functional and resilient, requires a BPEHS that ensures continuum of care for delivery of quality of services – with smooth referral from PHUs to hospitals as needed.

Figure 2: Sierra Leone: Distribution of available public health facilities hospitals (red), Health centers (blue) and Health Posts (green



[8]Health Sector Recovery and Resilient Plan

2.8. Health status

There has been a general improvement in mortality rates. Substantial declines in both infant and under-five mortality rates were witnessed from 2002 through to the early 2013s. However, there was stagnation of progress leading to high mortality during the decade of civil strife and war. By 2013, the Infant and child mortality began to decline significantly. The recent 2013 national household SLDHS suggests that under-five mortality is 156 per 1000 live births and infant mortality is 92 per 1000 live births

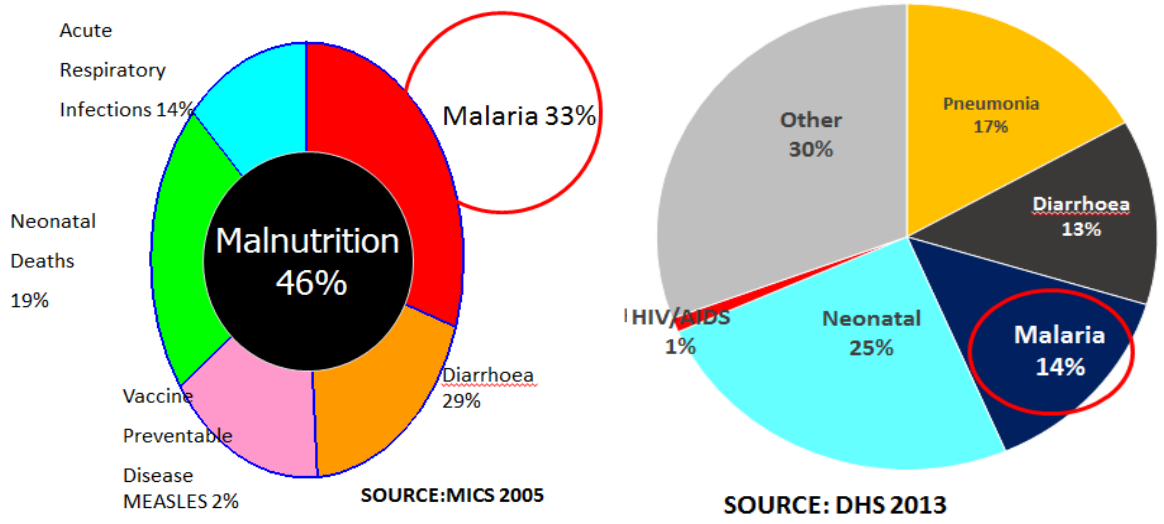
According to the Sierra Leone Demographic Health Survey (SLDHS) 2013 report, for the five years immediately preceding the survey (2008-2013), the infant mortality rate is 92 deaths per 1,000 live births. The estimate of child mortality (age 12 months to 4 years) is 70 deaths per 1,000 live births, while the overall under-five mortality rate for the same period is 156 deaths per 1,000 live births. The neonatal mortality rate is 39 deaths per 1,000 live births. The post neonatal mortality rate is 54 deaths per 1,000 live births.

For the 15-year period preceding the survey, under-five mortality rates have declined from 227 deaths per 1,000 live births during the late 1990s (1998-2004) to 156 deaths per 1,000 live births in the most recent five years (2008-2013). Infant mortality decreased from 152 deaths per 1,000 live births to 92 deaths per 1,000 live births in the same period (DHS 2013).

Maternal deaths account for 36 percent of all deaths among women age 15-49 years. The maternal mortality rate for the seven-year period preceding the survey was 1.97 maternal deaths per 1,000 woman-years of exposure. The maternal mortality ratio was 1,165 maternal deaths per 100,000 live births for the seven-year period preceding the survey (confidence interval ranges from 951 to 1,379 death per 1,000 live births). This ratio is not statistically significantly different from the ratio reported in the 2008 SLDHS at 857 per 100,000 live births. At current mortality rates, six percent of the women in Sierra Leone will die from maternal causes during their reproductive lifetime.

In 2013, Sierra Leone's under-five mortality rate (156/1,000) was the second highest in the world. The leading causes of death were pneumonia (17%), malaria (14%), diarrhoea (13%) and neonatal causes (25%)

Figure 3: Under Five mortality for malaria



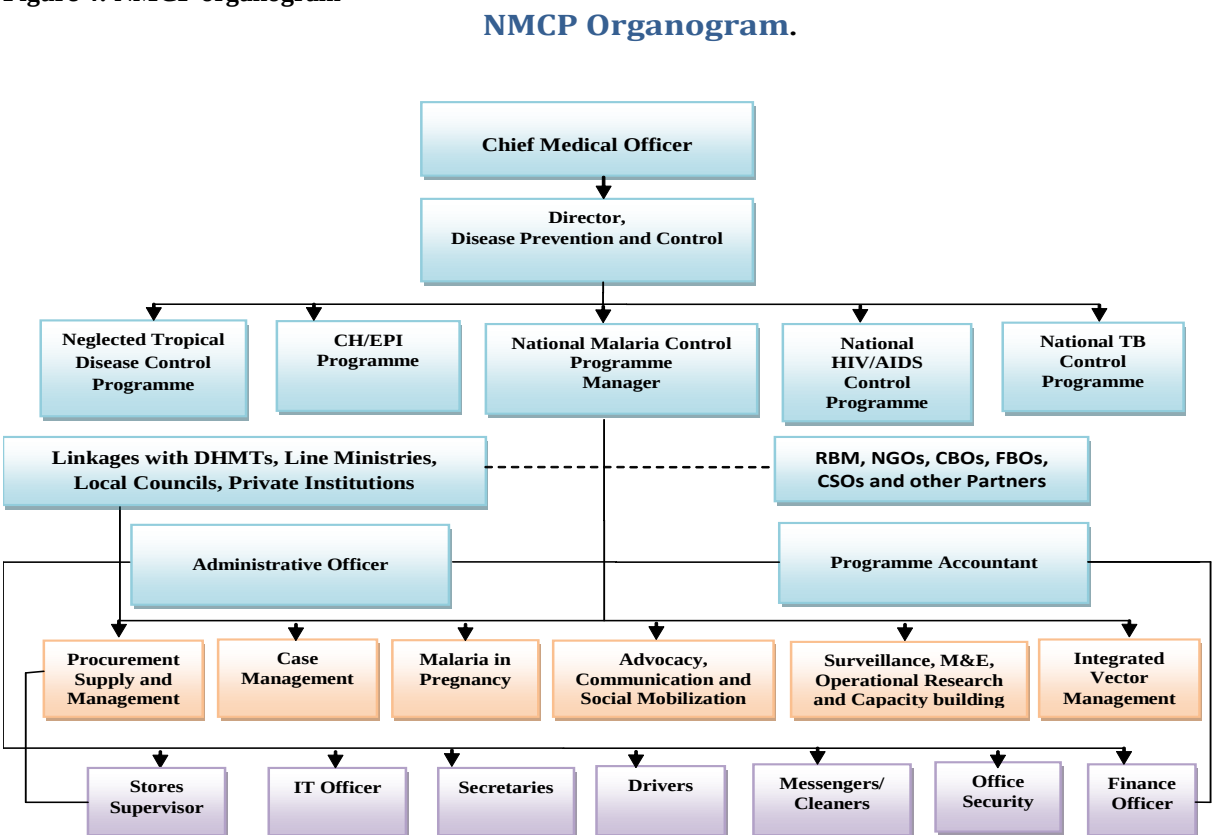
2.9. Institutional framework for malaria control

Malaria control and prevention are highly prioritized in the Sierra Leone development agenda. The National Malaria Control Programme (NMCP) is strategically placed within the Directorate of Disease
Prevention and Control in the Ministry of Health and Sanitation. It has a well-established national coordinating body with malaria Technical Working Groups providing planning and implementation technical support. The program has a number of steady and long term partners who provide technical assistance and funding for malaria interventions.

The NMCP is headed by a Manager supported by a Programme Administrator, technical staff, Accountant, Finance Officer, Store Supervisor, support staff and Secretaries.

The mandate of the Programme is to plan, facilitate the implementation, coordination, supervision, and monitoring of malaria control activities within an integrated disease control strategy. The MoHS has a specific budget line item for malaria control that supports the implementation and monitoring of various control interventions such as LLINs, prompt, effective and appropriate management of cases. In-order to fulfill its role, the NMCP is organized into seven (7) thematic areas as shown in figure 4.

Figure 4: NMCP organogram



To promote partnership, there is a broad based RBM Task Force Committee at the national level while there is District Health Management Team (DHMT) at the sub-national levels.

Management procedures

With sufficient staff and resources in place, the NMCP will increasingly take the lead in expanding malaria control activities throughout the country as well as to coordinate all activities implemented by the various partners. Additionally the programme will advocate for malaria within the Ministry of Health and Sanitation to ensure malaria control efforts are allocated financial resources and fully integrated into the overall health strategic plan.

Strengthening the capacity of malaria focal points at district level is crucial in order to ensure effective implementation and coordination. The malaria focal points will not only be supported

through training, but also continue to be provided with operational and logistic support such as office space, stationary, computers and accessories, motorbikes, etc.

Figure 5: Malaria control human resource plan

NO.	AREA OF WORK	STAFFING NEEDS	OCCUPIED	GAP
1	Programme management	4	3	1
2	Case management	5	2	3
3	Integrated Vector Management	6	2	4
4	M&E , Surveillance, Capacity building and Operational Research	8	7	1
5	Malaria in Pregnancy	5	1	4
6	IEC/BCC (communication)	5	2	3
7	Support staff	20	16	4
8	Logistics	5	1	4
9	Malaria commodities (forecasting, quantification)	5	1	4

CHAPTER III: MALARIA SITUATION ANALYSIS

The current Malaria Control Policy and National Strategic Plan (2010-2015) were developed in 2010 followed by the development of guidelines and manuals in the key intervention areas. Technical Working Groups were created to ensure coordination and follow-up of the implementation of interventions at district and community levels. The Malaria Programme Review (MPR) in 2013 noted that partnership was developed to support the NMCP and the Health authorities culminating into a successful securing of the Global Fund Round 10 grant following Rounds 4 and 7 grants.

Despite the strong leadership exhibited by the malaria control programme and collaboration with partners and stakeholders, several issues remain: funding is largely donor-dependent and

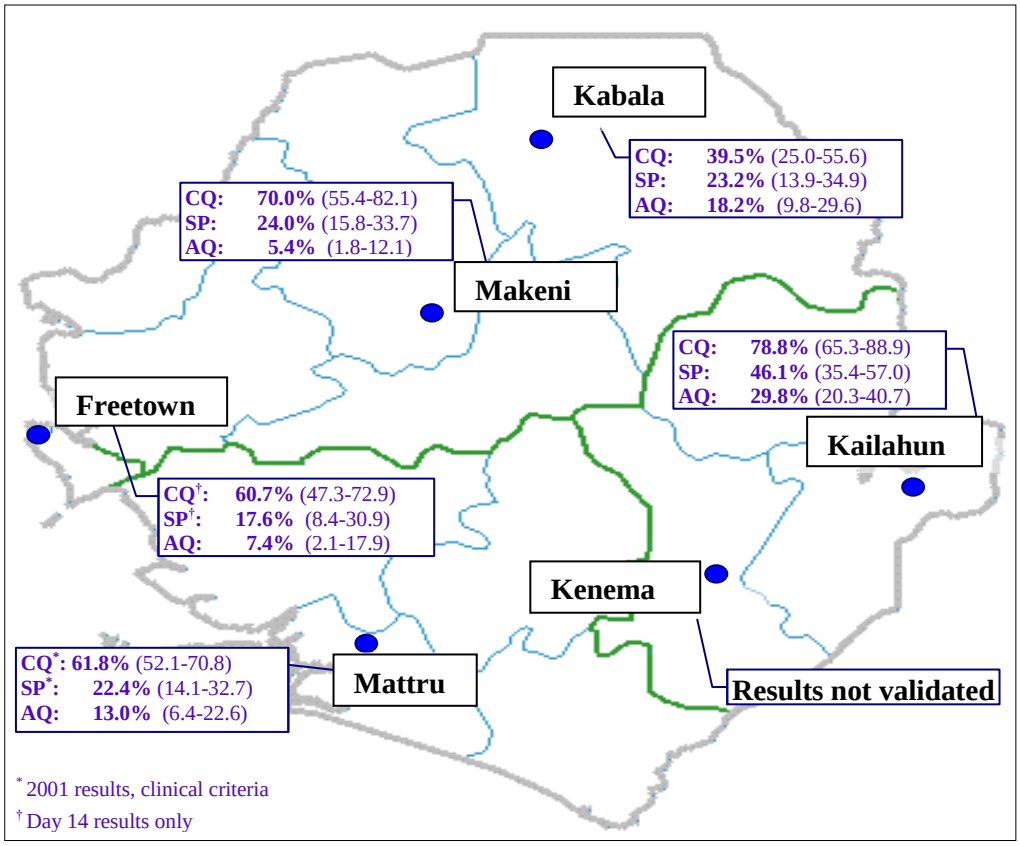
inadequate to sustain interventions including the free malaria treatment for the entire population declared in 2012; low reporting from the private sector; weak collaboration with other vector-borne disease programmes; and inadequate compliance and weak enforcement of policies and guidelines.

3.1 History of Malaria Programme

- In 1899, Sir Ronald Ross of the Liverpool School of Tropical Medicine visited Freetown;
- In 1900, Christophers & Stevens visited Freetown to make recommendations on mosquito control, including segregation;
- In 1901, "Culex gangs" established for larval control;
- In 1920, Liverpool School established Tropical Laboratory in Freetown, Alfred Lewis Jones Lab functioning through to 1945;
- In 1930, Environmental management and drainage in Freetown and surrounding areas expanding with time though to end of Second World War;
- Possible epidemic increase in malaria in Freetown and in 1931-1932;
- In 1939, Freetown important strategic port during war; reports of mepacrine prophylaxis used for troops and local school children through to 1944;
- In 1940, Pyrethrum spraying in Western Freetown;
- In 1943, Malaria Control Unit (MCU) established;
- In 1946, Trials of Gammexene IRS SW of Freetown and Marampa;
- In 1947, DDT, IRS and larvicidng in Freetown reported though to 1960; within 3km radius of Lungi Airport;
- In 1951-1952, Use of BHC for IRS in Freetown area;
- In 1952, Bonthe, Sherbo Island targeted for BHC IRS but not clear if executed;
- In 1961, Independence from Britain;
- In 1964, MCU staff integrated into other sanitary departments WHO-19 pre-elimination project in Freetown and Western Region starting with detailed epidemiological surveys and capacity review; vector control not initiated, focus on increasing access to CQ for fevers and by 1967 limited CQ prophylaxis in school children;
- In 1979-1982, CQ chemoprophylaxis of communities in Bombali & Makeni northern districts;
- In 1991, Civil war resulted in large scale population displacement and lack of any coordinated malaria control;
- In 1993, Trials of ITN and malaoprim (dapsone + pyrimethamine) in area near Bo;
- In 1994, The Ministry of Health and Sanitation with technical support from WHO established the National Malaria Control programme within the Directorate of Disease Prevention and Control.
- In 1998 the World Health Organization launched a Global Roll Back Malaria Initiative against malaria;

- Since 1998 - Sierra Leone committed itself to the Roll Back Malaria (RBM) Initiative;
- On April 25th 2000 – Sierra Leone became a signatory to the Abuja Declaration by African Heads of State, as part of the Roll Back Malaria initiative and its plan of action. Sierra Leone also subscribes to the global MDGs and Abuja targets to reduce malaria morbidity and mortality and therefore reduce human suffering, socio-economic loss and promote economic development and consequently the country drew a National Health Policy (MoHS 2002), which considered malaria control as a key priority.

Figure 6: Map of study sites with observed failure proportions



- July 2002/2003, the Ministry of Health and Sanitation and partners conducted a study on Chloroquine (CQ), Sulphadoxine+Pyrimethamine (SP), and Amodiaquine (AQ) in selected districts which was validated by WHO and MoHS. The results of the study were as follow: Chloroquine = 39.5%-78.8% failure rate, SP = 17.6%-46.1% and Amodiaquine = not available (Source: F. Checchi et al. Evidence basis for antimalarial policy changes in Sierra Leone, February, 2005).
- In 2003, Insecticide treated tarpaulins piloted for refugee camps in Kenema province;
- In 2004, Sierra Leone developed a National Malaria Control Strategic Plan (2004-2008) based on RBM principles of multiple interventions, involvement of all stakeholders and evidence-based interventions with the goal to reduce malaria morbidity and mortality in Sierra Leone. Key interventions promoted in the new RBM Plan included promoting home-based care, use of Insecticide Treated Nets (ITN) and Long Lasting Insecticide Nets (LLIN),

improving case management in health facilities and use of appropriate chemoprophylaxis in pregnancy;

- In 2004, the Sierra Leone Ministry of Health Sanitation received support from the Global Fund Malaria Grant Round 4 which focused on strengthening malaria control interventions in 8 out of the 13 districts;
- In 2004, the National Malaria Control Programme changed its first line drug for the treatment of uncomplicated malaria from using Chloroquine (Monotherapy) to combination therapy of ACTs as the drug of choice for the management of uncomplicated malaria. The revised policy made provision for the use of injectable quinine for the treatment of severe malaria and Sulphadoxine+Pyrimethamine for intermittent preventive treatment in pregnant women in their second and third trimesters;
- In 2004, IPTp policy introduced, two SP doses following quickening;
- In 2005, 5% of children slept under an ITN;
- In 2006, ACT replaced CQ as first line treatment after policy decision in 2004;
- In 2006, Mass free ITN campaign mounted by MSF in Bo and Pujehun districts distributing 65,000 nets;
- In 2006, November, national free mass LLIN distribution for children under one year alongside measles vaccine campaigns distributed over 1.1 million nets;
- In 2008, 600,000 ITN distributed routinely through ante-natal and EPI clinics since 2002;
- In 2008, 26% of children slept under an ITN;
- In 2008, Global Fund approved Round 7 malaria financing;
- In 2010, National Malaria Strategy Plan (2011-2015) launched, to reduce by 50% and 75% by 2015, mortality and morbidity due to malaria by 2015;
- In 2010, IRS only in selected chiefdoms of Bo (5/8 chiefdoms), Bombali (4/7 chiefdoms), Kono (5/8 chiefdoms), and Western Area Rural districts (12/20 communities) With Lamda (Pyrethoid); 87% household coverage;
- In 2010, Susceptibility test conducted- Bendiocarb, Malathion, DDT, Permethrin, Deltamethrin and Lamdacyhalothrin susceptible at Bo, Kono, Makeni and Western Rural;
- In 2010, 30% of children slept under an ITN;
- In December 2010, mass free distribution of 3.2 million ITN;
- In 2010, Introduction of RDT test-treat policy;
- In 2011, Post-LLIN distribution campaign survey suggests 72% of children were sleeping under an ITN;
- IRS piloted in four selected districts (Bo, Bombali, Kono and Western Area, Rural) achieving 97% household coverage;
- In 2012, Global Fund approved Round 10 malaria financing;
- National policy to expand community health workers launched to support a Basic Package of Essential Health Services (BPEHS) including Community Case Management of Malaria (CCMm);

- In 2012, ACT efficacy (AS+AQ and AL) above 94% in four sentinel sites (Bo, Kenema, Rokupa and Makeni);
- In 2013, 45% of children slept under an ITN;
- Large scale training of 6,515 CHWs in community based malaria RDT use and treatment;
- In 2010, Laboratory test carried out to evaluate the susceptibility of the following insecticides for potential use in IRS pilot programme for four districts in Sierra Leone: Bendiocarb 1%, Malathion 5%, DDT 4%, Permenthrine 0.25%, Deltamethrin 0.05% and Lamdacyhalothrin 0.05%. The result concluded that all insecticides are still effective for use in the chosen districts.
- However, DDT seems to be taking longer than 24 hour to effect 100% mortality. The performance of Permethrine is also slow compared to the other Pyrethroids both at knock down and mortality. In the pilot IRS programme it was recommended that first choice be Deltamethrine/Lamdacyhalothrin, even though both Bendiocarbs and Malathion performed equally better but their documented residual period would be negative especially for the pilot programme and with the transmission season for a year.
- In 2014, Ebola Virus Disease (EVD) outbreak struck Sierra Leone and had devastating effect on malaria control interventions;
- In June 2014, over 3.8 million LLIN distributed nationally despite Ebola epidemic;
- In 2014, IPTp 3 dose SP policy adopted but problems rolling out during Ebola epidemic;
- In 2014, December, Mass Drug Administration (MDA) for malaria with AS+AQ targeting population of 2,386,968 over 6 months of age in selected chiefdoms in the Bombali, Kambia, Koinadugu, Moyamba, Port Loko, Tonkolili and in all Wards in the Western Urban and Rural Areas;
- In 2015, January, Mass Drug Administration (MDA) for malaria with AS+AQ targeting population of 3.043 million over 6 months of age in selected chiefdoms in the Bombali, Kambia, Koinadugu, Moyamba, Port Loko, Tonkolili and in all Wards in the Western Urban and Rural Areas;

3.2. Epidemiological profile

3.2.1 Malaria parasites

Plasmodium falciparum is the dominant parasite mainly responsible for all severe cases and over 95% of uncomplicated cases. However, there are also cases of clinical malaria caused by *Plasmodium malariae and ovale* or a mixture of the two and *falciparum* (British Medical Research Council, 1998).

3. 2. 2 Malaria vectors

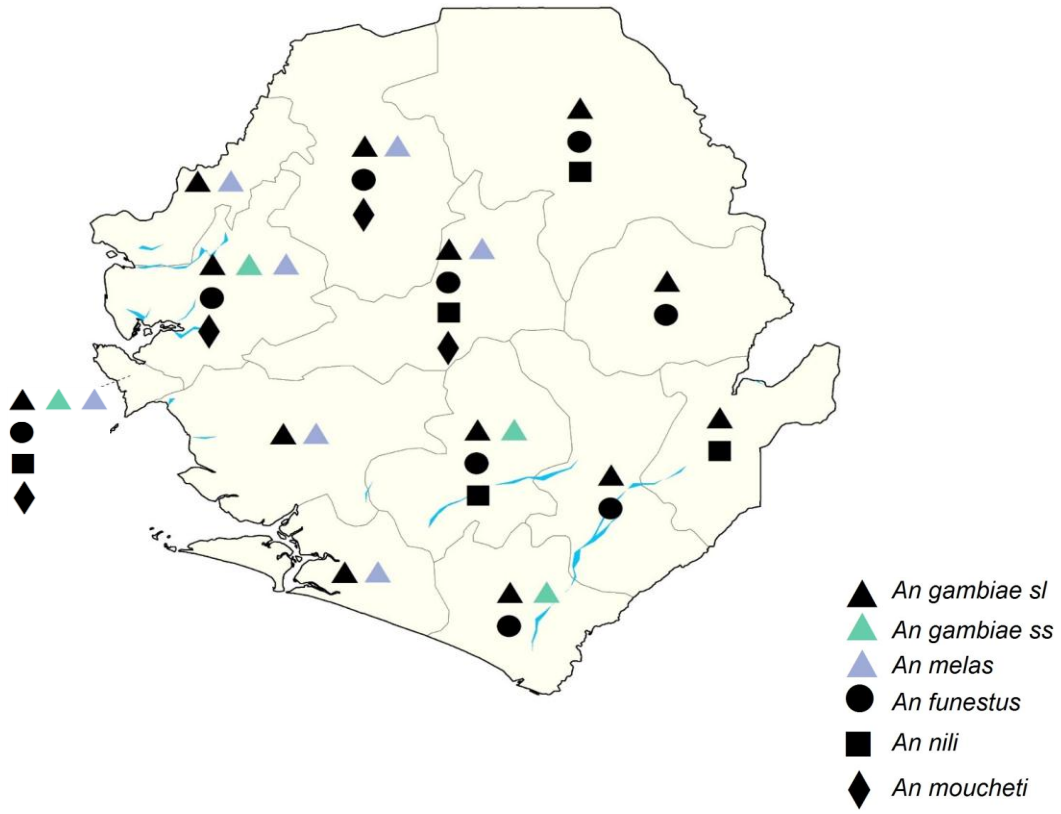
The predominant vector is *Anopheles gambiae sl.* but other species found in Sierra Leone are *Anopheles funestus* and *Anopheles melas.* The *Anopheles gambiae sl* is the predominant species

during the rainy season. The peak biting period is between 10p.m. – 2a.m[8]. The most recent entomological studies were carried out prior to the civil war between 1990 and 1994. Those studies found Annual Entomological Inoculation Rates (EIR) ranging from 6.1 to 884.2[6].

The final entomological database contained 189 site/time specific reports of anopheline vectors in Sierra Leone, reported between 1898 and 2012 and for which the survey site was geo-located.

The database includes site-specific records of some of the earliest malaria vector maps, developed by Christophers and Stevens (1900)[7], and reported vectors from different sites during Sir Ronald Ross's visit in 1901[8]

Figure 7: Recorded malaria vectors by district in Sierra Leone



Anopheles (An.) gambiae complex is ubiquitous across the county and members of the *An.* funestus group have been recorded across the country except for south-west and Port Loko district in the north.

[6] [9]Hay, S.I., D.J. Rogers, J.F. Toomer and R.W.Snow. 2000. Annual *Plasmodium falciparum* entomological inoculation rates (EIR) across Africa. I. Literature survey, internet access and review. *Transactions of the Royal Society of Tropical Medicine and Hygiene* ***94***, 113-127

[7] SR Christophers & JWW Stephens. Further reports to the Malaria Committee of the Royal Society. London, Harrison & Sons, 1900. pp. 22

[8] R Ross. First progress report of the campaign against mosquitoes in Sierra Leone. Liverpool School of Tropical Medicine, 1901, Memoir 5, part 1, pp. 22

Among the *An. gambiae* complex, only *An. gambiae* ss (both M (*An. colluzzi*) and S forms) and *An. melas* have been recorded in Sierra Leone. There are no reports of *An. Arabiensis* in Sierra Leone.

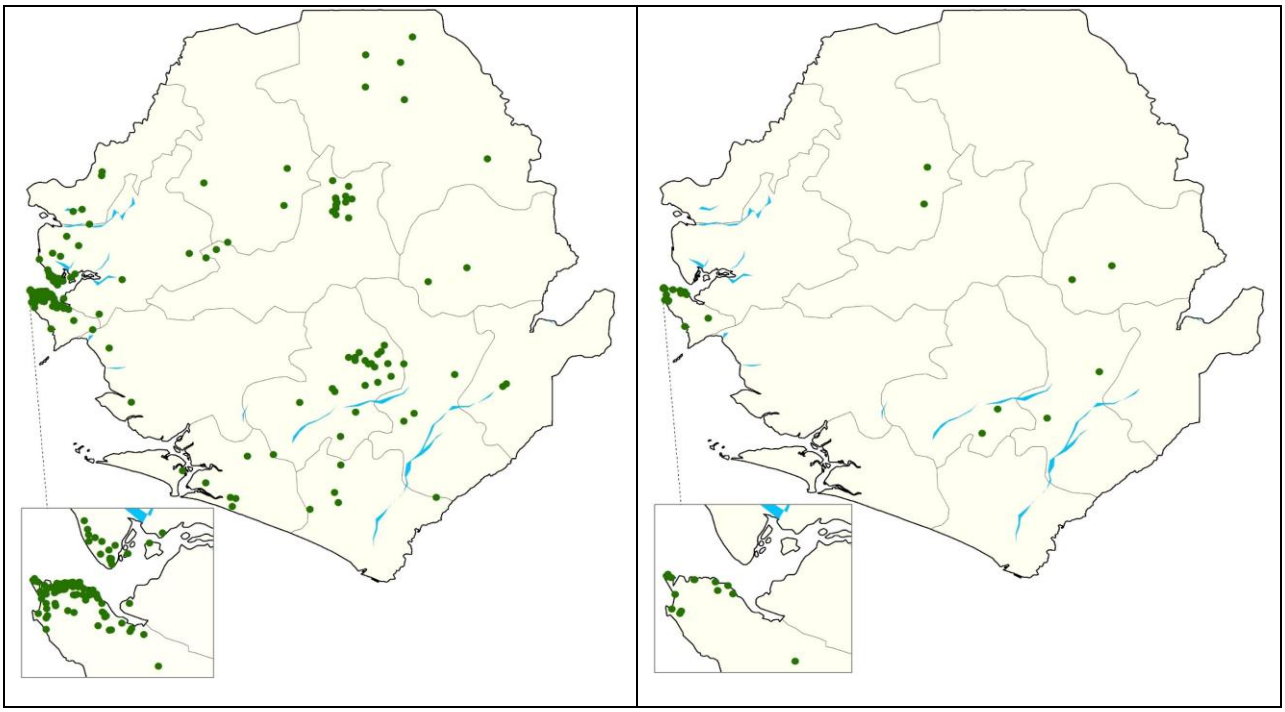
The furthest inland *An. Melas* has been reported is along the Rokel river[9].

An. nili group, *An. moucheti* group and *An. hancocki* have also been described in Sierra Leone, but only in small numbers.

Records since 1898 of other anopheline species, either non-vectors or considered incidental vectors of malaria in Sierra Leone identify the following species: *An. barberellus, An. cinctus, An. coustani, An. domicolus, An. freetownensis, An. hargreavesi, An. marshalli, An. mauritianus, An. obscurus, An. paludis, An. quadriannulatus* (of the *An. gambaie* complex), *An. rhodesiensis, An. rufipes, An. smithii, An. squamosus, An. tenebrosus, An. theilleri* and *An. Ziemanni*.

Figure 8: Site locations of mosquito sampling sites for 189 surveys undertaken between 1898 and 2012

Figure 9: Site locations of mosquito sampling sites for 25 surveys undertaken since 2005



An entomological data gap exists between 1993 and 2009, when no anopheline surveys were carried out. This period largely overlaps with the Civil War. Between 2005 and 2014 a total of 25 survey locations have been sampled.

[9] RCM Thomson. Studies on the Breeding Places and Control of Anopheles gambiae and A. gambiae var. melas in Coastal Districts of Sierra Leone. Bulletin of Entomological Research, 1946 36: 185-252

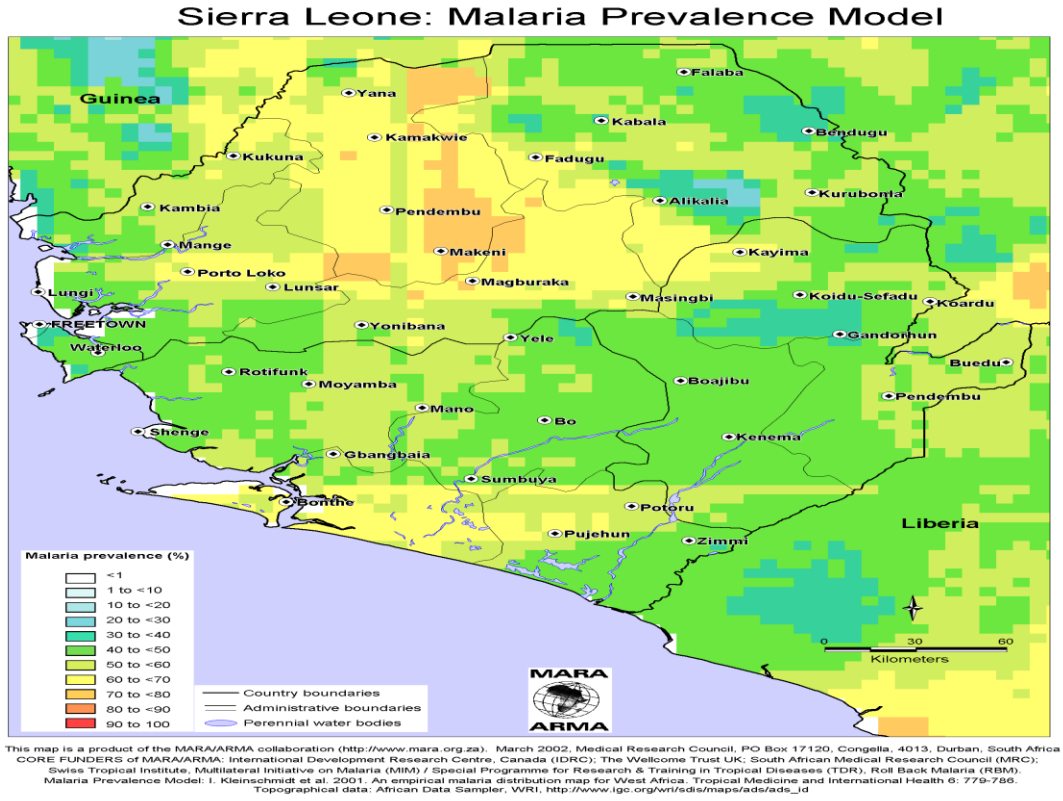
3. 2. 3. Population at risk and vulnerable groups

The entire population is exposed and living in stable malaria areas. As such, the entire populace is at risk of developing the disease and malaria accounts for about 40% of outpatient morbidity. It is therefore estimated that about 2,240,000 outpatient visits are due to malaria, of which about 1,000,000 patients are under five years. Pregnant women and under five children constituting 4.4% and 17.7% respectively of the current total population are the most vulnerable groups.

3.2.4. Dynamics of malaria transmission and level of endemicity

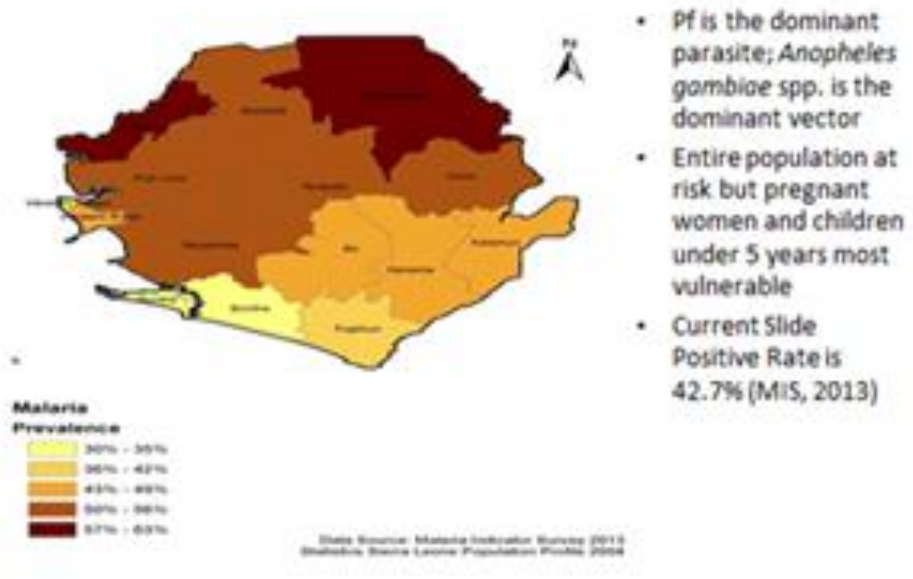
Malaria is endemic in Sierra Leone with stable and perennial transmission in all parts of the country. National prevalence data is limited to routine data collection and does not give the entire epidemiological picture as it only includes those cases seen at a health facility. Despite multiple national household surveys being carried out from 2005 to 2010 (MICS 2005, DHS 2008, MIS 2010), none of them collected information on parasitaemia. The best representation of the estimated malaria prevalence in country is the Malaria Prevalence Model map generated by MARA in 2002 (See figure 9).

Figure 9: Malaria Prevalence Model



The 2013 SLMIS is the first MIS that is inclusive of rapid diagnostic testing (RDT) and microscopy to determine the national malaria prevalence among children under five years of age. This survey revealed that, one-third (33%) of children under age 5 had fever during the two weeks preceding the survey, with a higher proportion of rural children (37%) than urban children (32%) having fever (MIS, 2013). When tested for malaria, 46% of the children age 6-59 months were positive based on Rapid Diagnostic Tests (RDTs). Analysis of the blood smears by microscopy revealed a slightly lower prevalence of 43% of children tested positive for malaria as illustrated in figure 6 below.

Figure 10: Malaria prevalence among children 6-59 months:



Regardless of which diagnostic test was used, malaria prevalence generally increases with age, does not vary greatly by gender, and decreases with mother's education level and with household wealth. Malaria prevalence measured by microscopy is almost two times higher in rural areas (48%) than in urban areas (28%). By region, malaria prevalence according to microscopy is highest in the Northern Region (52%) relative to the malaria prevalence in the Eastern Region (44%), Southern Region (37%), and Western Region (22%). Among the districts, the highest malaria prevalence is found in Kambia (61%) and the lowest is in Western Area Urban (19%) [4].

Although, there is some improvement in malaria prevalence especially in the districts of south and western area, the rest of the country shows persistent high intensity of transmission in figures 4 and 5 below.

Figure 11: Prevalence of malaria among children 6-59 months by residence, region and education

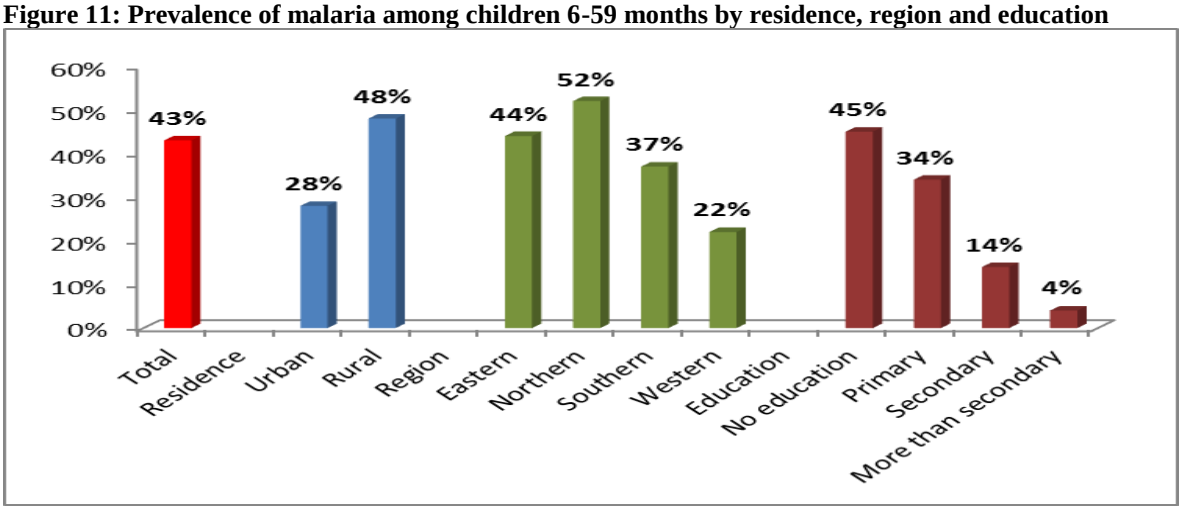


Figure 12: Prevalence maps showing malaria parasitaemia among children in 2000 and 2013:

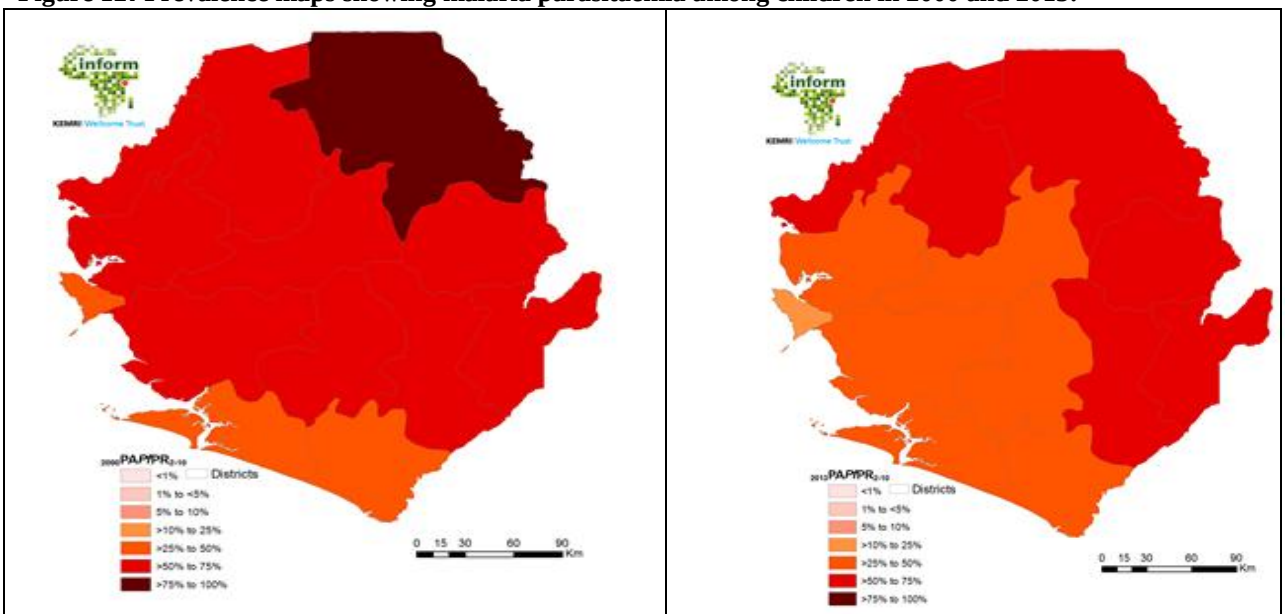


Figure 12a: Map of the population adjusted plasmodium falciparum parasite rate among children 2-10 years of age (PAP*f*PR$_{2-10}$) by district in 2000

Figure 12b: Map of the populationadjustedplasmodium falciparum parasite rate among children 2-10 years of age (PAP*f*PR$_{2-10}$) by district in 2013

3.2.5. Malaria morbidity trends from 2000 -2014

Malaria morbidity/Burden

Reports from health facilities obtained through the routine health management information system (HMIS), indicate an increasing trend in the number of total outpatient department (OPD) cases, with the malaria cases from 250 cases per 1,000 population in 2,000 to 437 cases per

1,000 population in 2014 (figure 9). This can be attributed to a number of factors including improved data capture (HMIS).

The parasite testing rates of suspected malaria cases in the country stagnated from 2005 to 2007 but saw a steady increase from 18% in 2007 to 35% in 2012 (Figure 10)

Figure 13: Malaria incidence per 1,000 populations per year

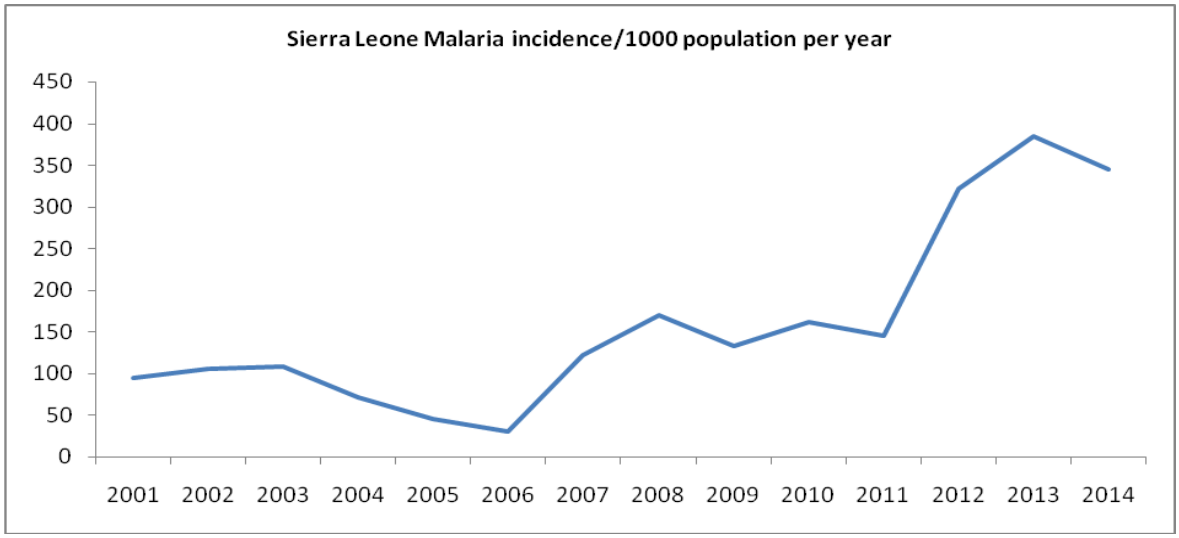
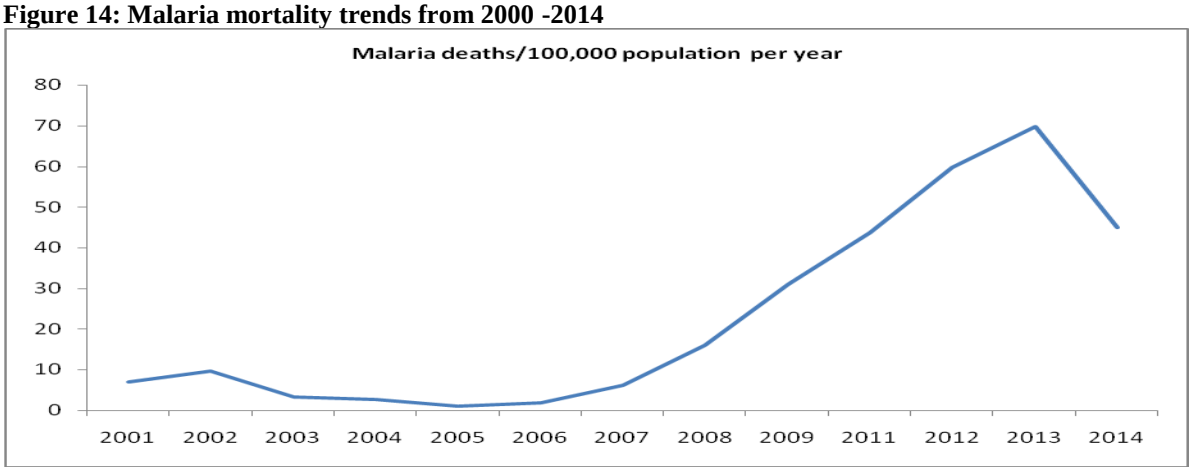


Figure 14: Malaria mortality trends from 2000 -2014



3.1.6. Malaria stratification and mapping

Sierra Leone has two distinct malaria epidemiological strata. In two-thirds of the districts, malaria is characterised by seasonal peaks of transmission and in the remaining one-third of the districts malaria transmission is more stable all year round.

Figure 15: Total number of LLINs distributed in 2004-2014

Figure 15a:Total number of LLINs distributed in 2004-2014

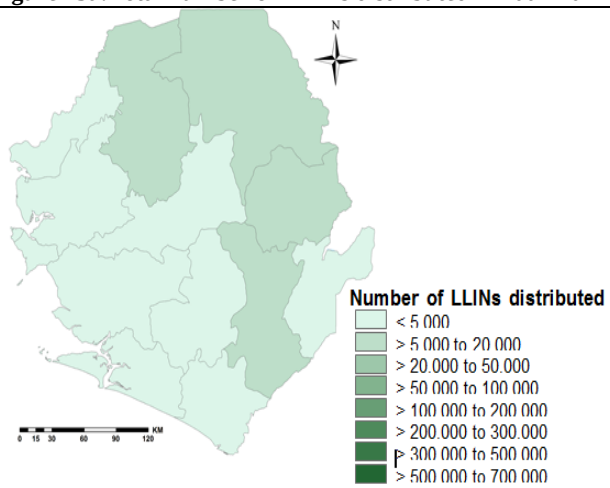


Figure 15b: Total number of LLINs distributed in 2006

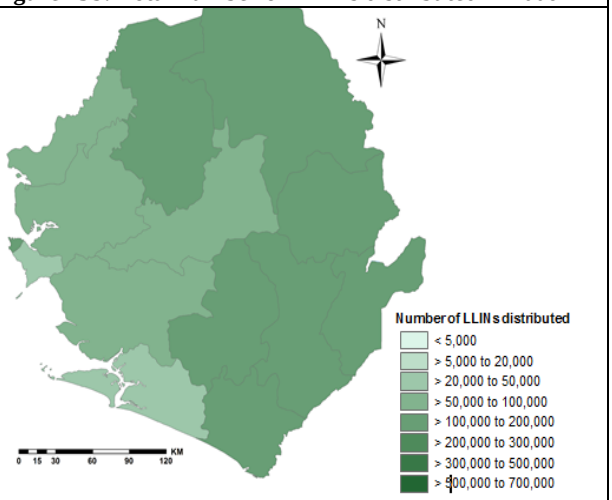


Figure 15c: Total number of LLINs distributed in 2010

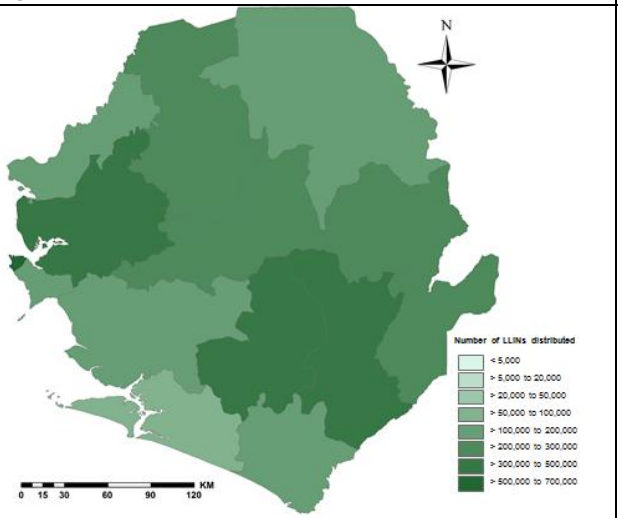


Figure 15d: Total number of LLINs distributed in 2014

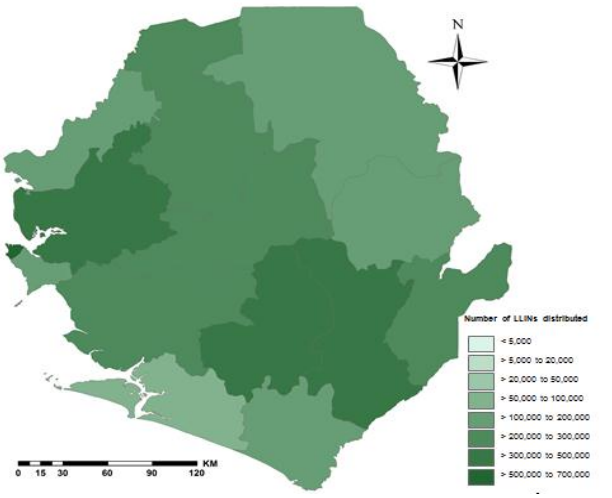


Figure 16: Sierra Leone: Indoor Residual Spraying (IRS) in 2011-2012

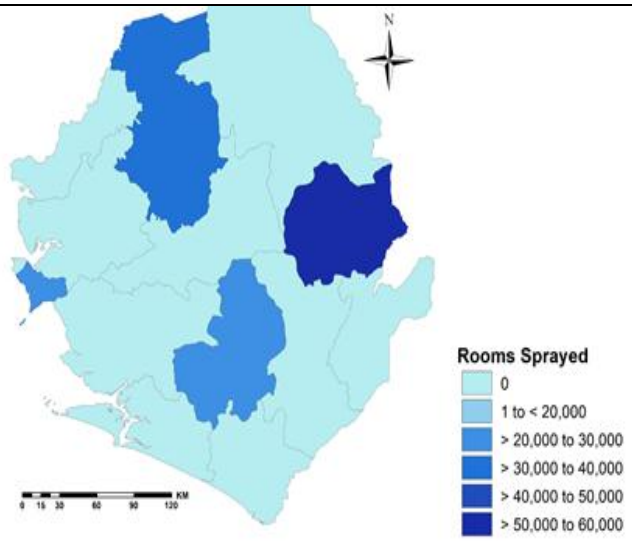
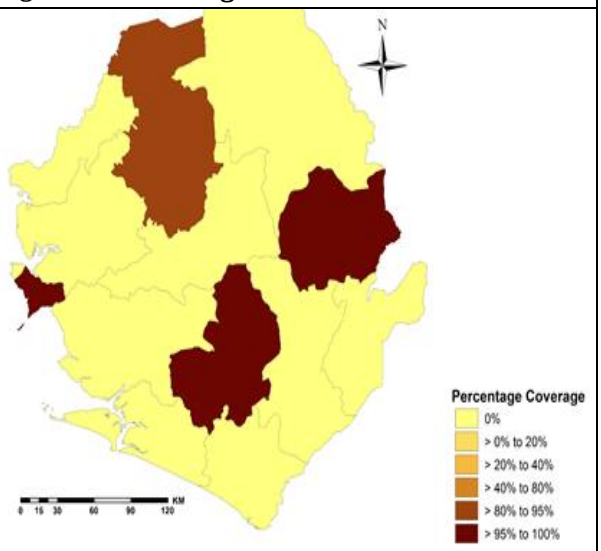
Figure 16a: Household sprayed	Figure 16b: Coverage
	

Figure 17: Usage of bed net and seeking Treatment:

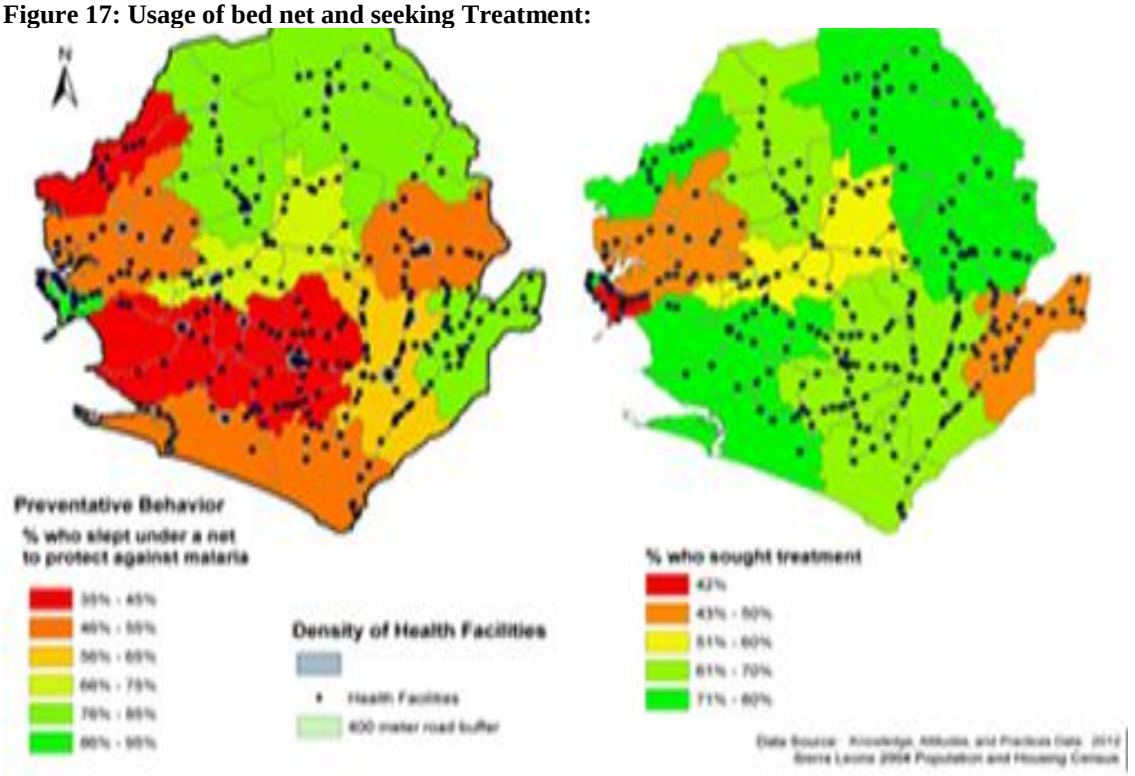
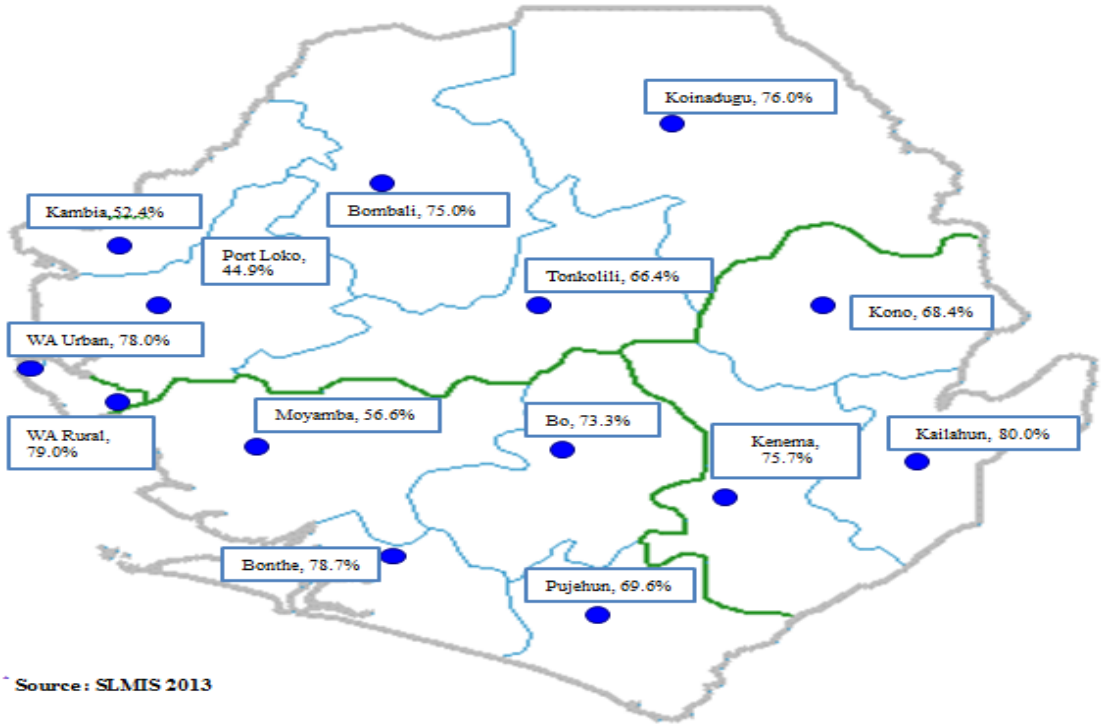
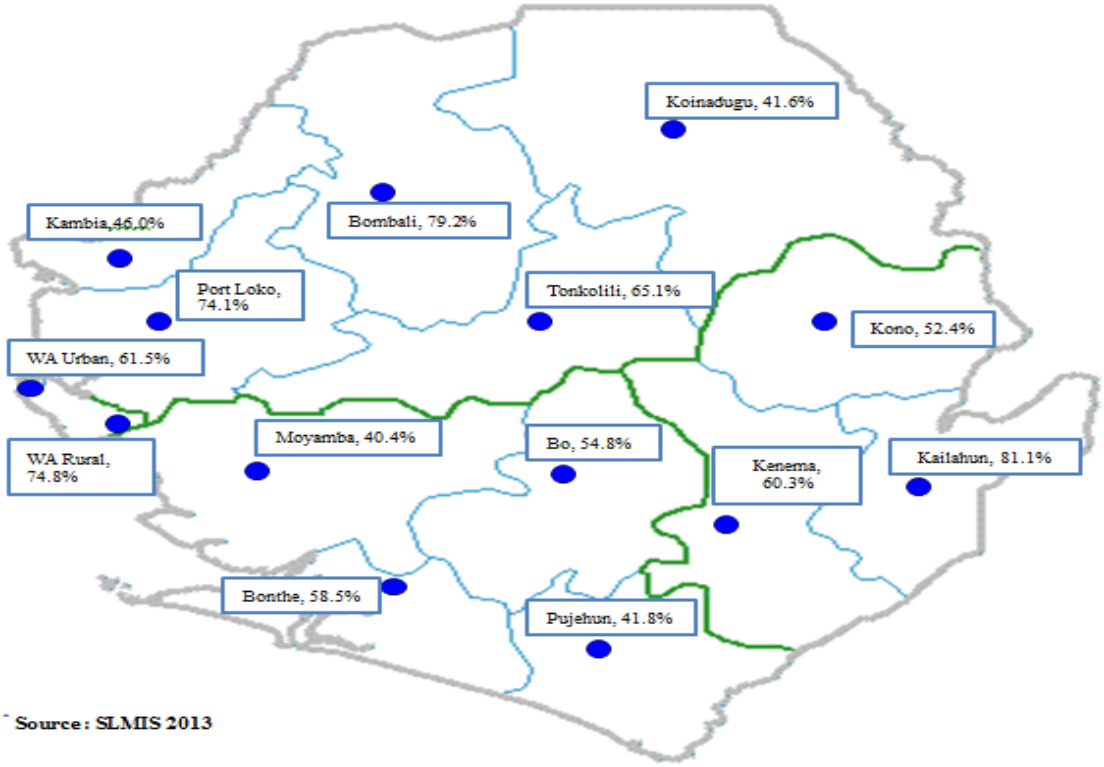


Figure 18: Access to ACTs treatment by district



Source: SLMIS 2013

Figure 19: Use of intermittent preventive treatment (IPTp2+) by pregnant women



Source: SLMIS 2013

Figure 20: Mass Drug Administration for malaria in Sierra Leone

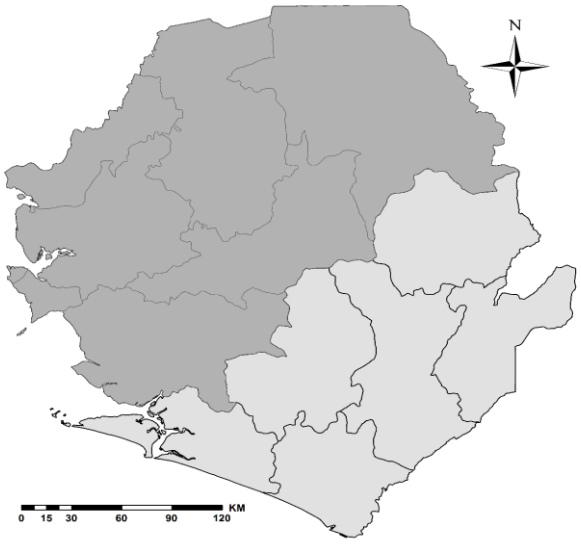
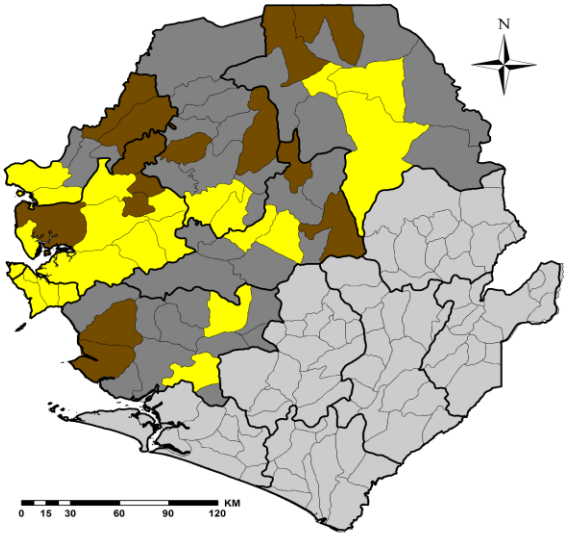
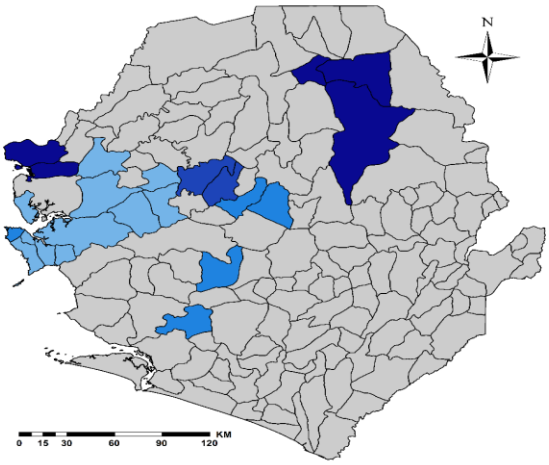
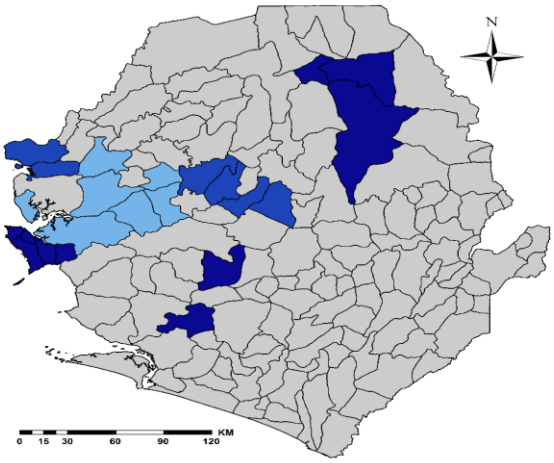
Figure 20a: Mass Drug Administration (MDA) for malaria districts (dark grey) in Sierra Leone	Figure 20b: MDA chiefdoms – control (brown) versus intervention (yellow)
	

Figure 21: MDA coverage in two cycles of MDA in Sierra Leone

Cycle 1 (5-8 December 2014)	Cycle 2 (16-19 January 2015)
	

Percentage Coverage

- 0 %
- > 75 to < 79 %
- > 79 - to 85 %
- >85 to 90 %
- > 90 to 95 %
- > 95 to 101%

CHAPTER IV: REVIEW OF MALARIA STRATEGIC PLAN 2011-2015

4.1 Overview

The 2011 - 2015 SLMSP implementation approach was to rapidly scale up the coverage of effective malaria prevention and treatment interventions in the first 3 years and thereafter maintaining achievements in the reduction of malaria infection prevalence and achievement of improved health outcomes.

The objectives of the current SLMSP 2016-2020 are to:

- Achieve at least 80% of suspected malaria cases have access to confirmatory diagnosis by 2018 and all malaria cases received effective treatment by 2018;
- Achieve at least 80% of the population have appropriate knowledge and up-take/practice of malaria prevention and management services;
- 100% of the population at risk will be protected with appropriate preventive interventions; to achieve at least 95% of all districts routinely report on malaria programme indicators; strengthen capacity for program management, coordination and partnership to achieve malaria performance of the strategic plan at all levels.

Furthermore, strategies identified for which implementation would lead to the achievement of the following:

- Improving access to diagnostics and effective treatment;
- Strengthening capacity of quality assurance and quality control; and
- Improved integrated vector management and maintain scale up of LLINs;

These strategies will be implemented through existing structures of the health system.

Malaria Epidemiology

Malaria is endemic in Sierra Leone with all the population at risk with pregnant women and children under years most vulnerable. *Anopheles gambiae* still remains the predominant vector with a high proportion of *An. Gambiae sl*. *Plasmodium falciparum* is the dominant parasite responsible for all severe cases and over 90% of uncomplicated cases

According to routine data, over 40% of outpatient morbidity for all age groups is due to malaria, and 47% in under-five children. It also accounts for 37.6% of all hospitalizations with a case fatality of 14.6%. Routine data on malaria cases and deaths is weak but available information

indicates that they account for 25%of deaths in all ages and 38% among under-five children. The MIS 2013 reported the malaria prevalence rate of 43% as measured by microscopy with the prevalence higher in rural areas (48%) than in urban areas (28%).

Malaria Programme Management and Leadership

The current Malaria Control Policy and National Strategic Plan were developed in 2010 followed by the development of guidelines and manuals in the key intervention areas. Technical Working Groups were created to ensure coordination and follow-up of the implementation of interventions at district and community levels. The NMCP secured funding from the Global Fund Round 10 grant after the implementation of Rounds 4 and 7 grants.

Despite the strong malaria control leadership and open-door interaction with stakeholders, funding is largely donor-dependent and inadequate to sustain interventions including the malaria free treatment for the entire population declared in 2012. There is low or no reporting from the private sector; weak collaboration with other vector-borne disease programmes; and inadequate compliance and weak enforcement of policies and guidelines.

Procurement and Supply Management

The MOHS and partners have undertaken the following in relation to procurement and supply management; updated procurement guidelines and SoPs, tools for Logistics Management Information System (LMIS) including a computer software ***mSupply*** and developed a Procurement and Supply Management Plan. A Risk Mitigation Matrix for commodity distribution to prevent 'leakages' was also developed.

Currently, malaria commodities financed by the GF are procured through the Voluntary Pooled Procurement (VPP) mechanism. It is expected that this arrangement will continue until the NPPU is approved by the GF to take over the procurement of commodities for the GF grant. A recent GF Portfolio Analysis in 2012 reported that the percentage of health facilities reporting 'No Stock-Out' of ACTs and RDTs were 96% and 95.3% respectively, which is consistent with the reported HMIS data.

However, the review noted that there are delays in clearing of commodities at the ports, resulting in artificial shortages as well as inadequate and poor storage facilities. Sierra Leone has weak Quality Assurance and Quality Control (QA/QC) systems for malaria medicines and diagnostic materials. Also there is incomplete and delayed reporting of Logistics Management Information System (LMIS) data especially at secondary and tertiary levels.

The GoSL, with the support of its development partners, has set up a National Pharmaceutical Procurement Unit (NPPU) in April 2013 to establish an integrated cost-effective system for the procurement and distribution of all health commodities based on globally recognised standards.

Integrated Vector Management

The malaria programme conducted three rounds of mass distribution campaigns of LLINs in 2006, 2010 and 2014. In 2010, a total of 3,264,927 LLINs were distributed for scaling-up to achieve the universal coverage, keeping in line with the global recommendations resulting in 98.6% administrative coverage. In 2014, a total of 3,523,873 LLINs were distributed to maintain and achieve universal coverage and resulted in 98.6% administrative coverage. The campaigns were complimented with routine distribution mechanisms through ANC and EPI clinics including Maternal and Child Health Week (MCHWs). Also, an indoor residual spraying (IRS) pilot was implemented in four (4) districts achieving coverage of 97% operational coverage in the targeted areas in 2010-2011 and 2012 covering 5.8% of the population in Sierra Leone.

Integrated vector management policies and guidelines require updating to reflect WHO recommendations. There is a need to strengthen coordination and partner collaboration for vector control and revitalise the national Technical Working Group.

Challenges: Stock out of LLINs for routine distribution; high coverage of ownership of LLINs the proportion of children under five years using LLINs has been low (44.9%); absence of insecticide resistance monitoring and entomological work in general in the presence of large scale use of insecticides for malaria control.

Malaria Case Management

The Malaria Control Policy has adopted testing for all suspected malaria cases before treatment, and the use of ACTs to treat uncomplicated malaria cases. Up to 6,515 Community Health Workers (CHWs) were trained in the case management of malaria and the use of RDTs at community level in 2013. The GoSL has instituted the Free Health Care Package (including malaria) for under-fives, pregnant women and lactating mothers. The package makes exception of malaria where all ages are guaranteed free malaria case management. The private sector is also heavily involved in malaria case management.

However, some hospitals (public and private) and privately-run clinics do not comply with the policies and guidelines on management of malaria. There is inadequate capacity at hospital level for the management of severe malaria. Supervision of health workers and the provision of health services are inadequate. There is inadequate Pharmacovigilance for antimalarials. In addition, there are reports of high attrition of CHWs who are essentially volunteers.

Malaria in Pregnancy

The NMCP has a strategy for prevention and control of Malaria in Pregnancy (MiP) and has been rolled out in the country. MiP is integrated with Reproductive Health Services of the Ministry of Health and Sanitation. Intermittent Preventive Treatment of malaria in pregnancy (IPTp) is also implemented at community level.

The policy and guidelines on IPTp require updating to reflect the 2012 WHO recommendation on number of SP doses. Although malaria in pregnancy is a critical intervention, there were reports of stock-outs due to problems with upstream supply chain. The involvement of private health providers as well as public hospitals is limited. Also there is inadequate monitoring and supervision of IPTp at community level.

Advocacy, Communication and Social Mobilization (ACSM)

Guidelines and a framework for implementing behaviour change communication at all levels is included in the National Malaria Behaviour Change Communication Strategy 2009-2013. The presence of several partners and funding from the Global Fund, has contributed significantly to this effort. Findings from national surveys including the KAP 2012, NDHS 2008, MIS 2010 and MIS 2013 indicates a high level of awareness of malaria prevention and control at community level. Despite these achievements, interventions are not translating to improved practices only 42% of members among all households slept under LLIN the night before the survey. As expected, ITN use is higher among households that own an ITN. In households that own at least one ITN, 62 percent of the population slept under an ITN the night before the survey. In addition, only 53% of pregnant women who slept under an LLINs the night before the survey among all households (MIS 2013). Also there are inadequate numbers of trained personnel.

Surveillance, Monitoring and Evaluation and Operational Research

The NMCP has a Monitoring and Evaluation Plan aligned with the current National Malaria Strategic Plan. As of 2011, malaria data collection and reporting tools have been integrated in the HMIS. The programme relies on the recent DHIS2 with a customized malaria module and uses the available national integrated supervisory checklist. Annual review and planning meetings are also held and an annual report is prepared and shared. To assist in reporting data and other events to the DHMT, PHUs have phones. All districts have Disease Surveillance Officers as well as Malaria Focal Points. The NMCP has coverage and impact data from various surveys. Therapeutic efficacy tests are consistently conducted and the results have been used for policy formulation.

Other players in malaria control continue to report vertically, by-passing the government system. Supervision, monitoring and evaluation of activities are uncoordinated and irregular mainly at district level. DHMTs lack backup systems for data and analysis is not usually done for local use. There is frequent breakdown of the DHIS2 at district level. There is also poor data collection and documentation at hospital level coupled with lack of reporting tools and qualified health information personnel. The oversight function of the district over NGO supported health facilities is inadequate. Nationally, there is no malaria research agenda and there is limited local capacity in malaria research for use by the NMCP.

Table 3: Summary of Strengths, Weakness, Opportunities and Threat analysis

STRENGTHS	WEAKNESS
Strong political will and government commitment to the programme	Inadequate consultation in policy formulation
Availability of National Malaria Policy documents and guidelines to guide policy implementation.	Inadequate compliance and weak enforcement
Malaria Policy informed by a strong national and international research evidence.	Weak Public -Private partnership
Well established and effective RBM partnership especially at the National level.	Poor involvement of the private sector (health and non-health) in implementation of malaria control and prevention activities.
A core group of well trained staff at national level.	Weak regulation of the private sector
Possibility of capacity development for staff.	Irregular supportive monitoring and supervision at all levels.
Possibility of technical support from partners.	
Multiple systems for accountability, performance contract, performance review targets	
Availability of tax waiver on all antimalarial products.	
Provision of FREE antimalarial commodities for all categories of the population.	
Commitment by partners and other stakeholders that have committed funds for malaria programme.	Human resource gaps at all levels of health service delivery.
Knowledge on proven interventions for successfully rolling out on a countrywide basis.	Bureaucratic recruitment process for GoSL paid staff
Decentralized health structure that is integrated into the health care delivery system and community level structures.	Gaps in total required resources for meeting scaling up targets.

OPPORTUNITIES	THREATS
Communities identifying themselves to be key partners in operations and planning for successful programme implementation.	Global financial instability and civil unrest.
Availability of MoHS Post Ebola Recovery Plan	Dependence on external funds to address key policy issues
Availability of a new framework guiding Action and Investment to Defeat Malaria (AIM) 2016-2030 which provide clear argument for investing in malaria control and elimination over the next 15 years a complement to the new WHO Global Technical Strategy for Malaria (GTS)	Absence of sustainability plan in the face of dwindling GF support and other donors
Availability of NGO Liaison unit within the MOHS for better coordination and resource mobilization	Emergence of complex emergencies including Ebola
Partnership with other programmes and directorates	Inadequate support for integrated monitoring and supervision
Established Local Councils and DHMTs	

4.3 Impact of the Ebola Virus Disease on malaria programme

In May 2014, Sierra Leone experienced its first cases of Ebola Virus Disease (EVD) in the remote eastern part of the country, at its intersection with Guinea and Liberia.
The outbreak quickly progressed from a localized to a generalized epidemic, shifting from the sparsely populated east to more densely-settled urban and peri-urban areas in the west.

Epidemiological reports have shown that the number of cases, widespread distribution (all 14 districts), and intense transmission of EVD from May 2014 onwards in Sierra Leone have remained unprecedented, outpacing the morbidity and mortality figures of neighbouring Guinea and Liberia.

By September 2015, there were a total of 8,704 confirmed cases and 3,585 deaths, making Sierra Leone the worst affected country in West Africa and the world (Ministry of Health Sierra Leone EVD Situation Report 2015).

Evidence shows that the lack of infection prevention and control contributed to the rapid spread of the virus. Additionally, resources meant for other programmes including malaria were diverted to the containment of EVD, potentially reversing gains in addressing child mortality (Millennium Development Goal 4), maternal mortality (MDG 5), and HIV/AIDS, malaria and other diseases (MDG 6).

Health workers responding to the Ebola crisis were highly affected by the epidemic given their high risk of exposure and infection through routine service delivery. By June 2015, a total of 296 health care workers are known to have been infected with EVD, with 221 deaths (74.6%), 11 of whom were specialized physicians. Prior to the EVD outbreak, the ratio of skilled providers to population was very low, at just 3.4:10,000, against optimal levels of 25:10,000. This critical loss of front-line health workers has exacerbated already inadequate human resources in the health sector. Improving the number and capacity of the skilled health workforce is a central challenge for the post- Ebola recovery period.

The initial clinical presentation of EVD is very similar to that of malaria i.e. fever, anorexia, fatigue, headache and joint pains - posing a problem of differential diagnosis for both patients and health care workers. Patients who have signs and symptoms of malaria are: i) often frightened to seek care and being referred to Ebola holding centres as suspected EVD due to similar symptoms; and ii) are probably seeking self-treatment through the private informal sector or dying at home for lack of access to prompt diagnosis and effective treatment. For cases which are being referred, given the similarities of clinical presentation, the likelihood of malaria cases being retained as suspected Ebola cases in holding centres is very high. In many health facilities testing with RDTs or microscopy has been temporarily suspended for fear of contracting Ebola, due to lack of personal protective equipment (PPE) for use by laboratory technicians and personnel performing these tests.

Testing with RDT has however increased over time in many health facilities owing to training of health worker on infection prevention and control (IPC) and availability of PPEs.

The EVD outbreak has led to a decline in the utilization of health care facilities for non-Ebola-related health needs, particularly in urban areas such as Freetown, with a much lower proportion of women reporting post-natal clinic visits. A survey conducted in October 2014 among 1,185 Peripheral Health Units in Sierra Leone noted that 47% were closed at the time of assessment, with a similar number reporting temporary closure since the start of the epidemic. Although 96% of Peripheral Health Units remain operational, the country recorded a 23% drop in institutional deliveries; a 39% drop in children treated for malaria; and a 21% drop in children receiving basic immunization (Penta 3). The decline in utilization of health services is due to a number of factors: the lack of trust in the health staff; loss of confidence in the health system (as non-Ebola cases would mingle with Ebola cases); and safety-related reasons.

4.4 Proposed Way Forward

Moving forward, the following key directions and reorientation of efforts are needed to achieve the malaria strategic plan in Sierra Leone:

1. Programme Management

a) Increase and sustain government's contribution to the funding of malaria control in Sierra Leone;
b) Prioritize malaria control activities in the Local Council District and hospital plans;
c) Strengthen coordination of the RBM partners at national, district and chiefdom levels;
d) Increase the involvement of non-profit and private-for-profit institutions, and hospitals (public and private);
e) Strengthen the capacity of the District Health Management Teams to coordinate and supervise service delivery including malaria control;
f) Integrate malaria prevention and control in the curriculum for pre-service training institutions and provide the necessary support as required.

2. Procurement Supply Management

a) Strengthen the integration of the NMCP procurement processes with CMS/NPPU;
b) Build new and renovate storage facilities at national, district and chiefdom levels;
c) Strengthen QA/QC system including field supervision and linkage with an External Quality Assurance programme;
d) Strengthen the LMIS for effective monitoring of service and quantification of commodities.

3. Integrated Vector Management

a) Review/update policy and guidelines for integrated vector management;
b) Strengthen the oversight role of the IVM subcommittee on the activities of NGOs, FBOs, and private organizations in malaria vector control;
c) Strengthen routine LLINs distribution system to maintain universal coverage;
d) Establish entomological and insecticide resistance monitoring systems.

4. Malaria Case Management

a) Strengthen the compliance of all stakeholders to national policies and guidelines;
b) Build human resource capacity and infrastructure for QA/QC system for malaria diagnosis and treatment;
c) Ensure regular supply of ACTs and RDTs for community case management of malaria;
d) Strengthen and conduct regular supportive supervision and mentoring, particularly of CHWs on malaria case management;
e) Develop innovative and practical approaches for motivation and retention of CHWs;
f) Improve pharmacovigilance of anti-malaria medicines.

5. **Malaria in Pregnancy**
   a) Rollout reviewed and updated MiP policy and guidelines;
   b) Ensure continuous availability of MiP drugs at all levels;

6. **Behaviour Change Communication**
   a) Strengthen coordination and engagement of potential partners
   b) Ensure quality of delivery of interventions and periodic evaluation including barrier analysis.
   c) Scale-up capacity building at all levels for behaviour change communication

7. **Surveillance, Monitoring and Evaluation and Operational Research**
   a) Update the malaria stratification in Sierra Leone.
   b) Strengthen use GIS for routine mapping of morbidity, mortality and intervention coverage for decision making.
   c) MoHS should strengthen the logistics support to supervision of hospitals and the supervision of PHUs by DHMTs.
   d) MoHS should ensure regular maintenance and upgrading of the DHIS system.
   e) Strengthen the staffing capacity for health information at DHMT and hospital levels.
   f) Develop, share and regularly review the malaria research agenda.

CHAPTER V: MALARIA CONTROL STRATEGIC PLAN 2016-2020

Introduction

The 2016 -2020 Sierra Leone Malaria Control Strategic Plan (SLMSP) was developed based on the recommendations of the malaria programme review 2013, recognition of the impact of malaria intervention and the Health Sector Recovery 2015-2020.

This strategic plan was also developed based on the recommendations of the Global Technical strategy 2016-2030 and the Roll Back Malaria Partnership's Action and Investment to defeat malaria 2016-2030 (AIM) to ensure shared goals and complementarity. These documents position malaria in the wider health and development agenda. AIM and the WHO Global Technical Strategy for malaria share the timeframe of the Sustainable Development Goals. AIM shows how the Sustainable Development Goals are inextricably linked to the achievement of a malaria free world, and the how the continued reduction and elimination of malaria will be central to the realisation of this new development agenda.

5.1. MSP guiding principles and social values

This MSP is aligned to the guiding principles of the broader National Health Sector Strategic Plan (NHSSP 2010-2015), Sierra Leone Health Recovery Plan 2015–2020, National Ebola Strategy for Sierra Leone 2015-2017 and the Basic Package of Essential Health Services 2010 (revised 2015). These principles are: universal coverage with proven malaria interventions, equity and equality and non – discrimination, participation and accountability and the right to the health elements of: availability, accessibility, acceptability, adequacy, quality and contiguous expansion of interventions.

a) Universal coverage for all populations at risk with proven malaria interventions

The whole population including key affected populations (children under the age of five years, pregnant women, people living with HIV/AIDs, internally displaced populations (IDPs), refugees) will all access malaria prevention and control interventions.

b) Equity, equality and non-discrimination

All individuals are equal as human beings and by virtue of the inherent dignity of each person. All are entitled to their human rights without discrimination of any kind, such as by: race, colour, sex, ethnicity, age, language, religion, political or other opinion, national or social origin, disability, property, birth or other status as enshrined in the international human rights treaties and charters to which Sierra Leone is a signatory. This principle requires the Government to address discrimination (intentional and non-intentional) in laws, policies and practices, including in the distribution and delivery of resources and health services.

c) Availability

The Ministry of Health and Sanitation will ensure that public health and health care facilities, goods, services and programmes exist in sufficient quantity and quality. This is a broader health system issue that directly affects malaria service delivery.

d) Accessibility

The Ministry of Health and Sanitation will ensure non-discrimination, physical accessibility, economic accessibility (affordability) and information accessibility with regard to public health and health care facilities, goods, services and programmes.

e) Acceptability

Ensure that public health and health care facilities, goods, services and programmes are respectful of medical ethics and culturally appropriate, sensitive to age and gender.

f) Adequacy and Quality

The Ministry of Health and Sanitation will ensure that public health and health care facilities, goods, services and programmes are user friendly, scientifically and medically appropriate and of high quality.

g) Contiguous expansion of interventions

Malaria control interventions will be guided by expansion of the gains made by past interventions.

The SLMSP Social values

The implementation of the SLMSP shall be guided by the following social values:

a) Evidence-led and forward looking

The implementation of the SLMSP shall be evidence-led, forward looking and take into account emerging trends, risks and health innovations.

b) Pro-poor and sustainability

The SLMSP shall be pro-poor and shall provide a framework to support sustainable development. In order to address the burden of disease in a cost effective way, the GoSL Private-for-profits and Private-for-non-profit shall provide services included in the SLMSP with special attention to the underserved parts of the country. The GoSL shall explore alternative, equitable and sustainable options for health financing and health service organization, targeting vulnerable groups.

c) Partnerships

The government of Sierra Leone considers partnership with other institutions, ministries, CSOs and the private sector as a cornerstone of all its undertakings. With regard to service delivery, the private sector shall be seen as complimentary to the public sector with respect to increasing geographical access to health services (scope and scale). Efforts shall be made towards joint planning, monitoring and evaluation between the GoSL and other institutions, ministries, CSOs and the private sector in an effort to strengthen accountability, participation and transparency.

d) Primary Health Care

PHC shall remain the major strategy for the delivery of health services in Sierra Leone, based on the district health system, and recognizing the role of hospitals as an essential part in a national health system. Greater attention and support shall be given to health promotion, education, enforcement and prevention interventions as defined in the Health Sector Recovery Plan 2015-2020 and empowerment of individuals and communities for a more active and meaningful participation in health development through District Health Strengthening Committees, Facility Management Committee, Community Health Workers.

e) The Sierra Leone Basic Package of Essential Health Services (BPEHS, 2015)

In order to address the burden of disease in a cost effective way, public and private providers shall offer services that are included in the BPEHS.

f) Integrated health care delivery

Curative, preventive, promotive and rehabilitative services shall be provided in an integrated manner.

g) Gender-sensitive and responsive health care, policy formulation and programming

A human rights and gender-sensitive and responsive national health delivery system shall be achieved and strengthened through mainstreaming human rights and gender analysis in planning and implementation of all health programs. To facilitate and strengthen the evidence base for human rights and gender mainstreaming, efforts shall always be made to disaggregate health data by age and sex and gender analysis carried out on the results in order to enhance the effectiveness and efficiency of interventions and programs. Every effort will be made, when involving CSOs, to specifically include women-centred CSOs.

h) Mainstreaming of health into other sectoral policies

Health shall be mainstreamed in all relevant policies and the MoHS, with its stewardship role on health issues, shall provide advice to other government ministries and departments and the private sector.

i) Decentralization

Health services shall be delivered within the framework of decentralization.

5.2. Vision and Mission

5.2.1 Vision

"Access to malaria control interventions for all"

Every Sierra Leonean has the right to access highly effective malaria preventative and curative services delivered as close to the households as possible through a "functional resilient national health system that delivers safe, efficient and high quality health care services that are accessible, affordable and equitable to all Sierra Leoneans.

5.2.2 Mission

To direct and coordinate efforts towards a malaria-free Sierra Leone through effective partnerships.

5.3. Strategic Directions and Policy Priorities

Malaria control is integrated at all levels of the health care delivery system and delivered through the Basic Package of Essential Health Services (BPEHS) for Sierra Leone. It relies on the health sector policy based on country ownership and mutual accountability according to the Sierra Leone Health Sector Recovery and resilience Plan.

5.4. Programme Policy Statements

Malaria Case Management

- All suspected malaria cases should be parasitologically confirmed either with microscopy or RDT before antimalarial treatment;
- Treatment solely on the basis of clinical suspicion should only be considered when a parasitological diagnosis is not accessible or possible;
- The drug of choice for the treatment of uncomplicated malaria is Artemether+Lumefantrine (AL)
- Artesunate+Amodiaquine (AS+AQ) can be used as an alternative option
- Parenteral Artesunate is the drug of choice for the initial treatment of severe malaria.
- Complete severe malaria treatment with full course of AL or ASAQ;
- Parenteral Artesunate (IV or IM) is the drug of choice for the initial treatment of severe malaria. This drug should be strictly reserved for treatment at health facility levels where parenteral drug administration can be properly supervised. However, where parenteral Artesunate is not available, parenteral Artemether or Quinine in that order of preference may be used. Follow-up treatment is the full course of AL or ASAQ after at least 24 hours of initial treatment and a patient is able to tolerate oral medication;
- In case of referral, pre-treatment should include Artesunate suppositories;

Intermittent Preventive Treatment (IPT)

The drug of choice for malaria prevention during pregnancy is Sulphadoxine+Pyrimethamine (SP);

Every pregnant woman visiting the health facility after the 1st trimester should receive the recommended minimum of three (3) doses of IPTp (SP).

Intermittent Preventive Treatment in Infants (IPTi)

- The drug of choice for malaria prevention infants is Sulphadoxine+Pyrimethamine (SP)
- Every child will be given SP three times in their first year of life when they receive routine EPI vaccinations (DTP2, DTP3 and measles).

Vector Control Measures

Insecticide Treated Nets (ITNs)

Long lasting insecticide treated nets (LLINs) are recommended to be used by everybody in Sierra Leone. Periodic mass campaigns as well as continuous routine distribution are the recommended strategy to achieve and maintain universal coverage. The routine distribution is through:

- Provision of **FREE LLINs** to children 12-59 months on successful completion of Penta 3 immunization
- Provision of **FREE LLINs** to pregnant women during first contact.

Integrated Vector Management

All vector control interventions for the control of vector borne diseases shall be planned and implemented within the broad context of IVM.

MoHS shall ensure the formulation, endorsement by the highest possible government body and strict application of policies and legislation relevant to alleviation of the risk of proliferation and spread of disease vectors and other consequences such as development and spread of vector resistance to insecticides due to individual, communal and institutional actions in the environment.

5.5. Goal and Objectives

5.5.1: Goal

By 2020, reduce malaria morbidity and mortality by at least 40% compared with 2015.

5.5.2: Objectives

To achieve the above goal, the following objectives have been identified:

1. ***Objective 1a***: All suspected malaria cases should have access to confirmatory diagnosis
   Objective 1b: All malaria cases to receive effective treatment.
2. ***Objective** 2a*: Provide access to 100% of the population at risk with preventive measures by 2017
   Objective 2b: To protect at least 80 % of pregnant women and children under one year with IPT 3 by 2020
3. ***Objective 3***: To provide knowledge to the population such that at least 80% practise malaria prevention and treatment measures by 2018.
4. ***Objective 4***: By 2020, at least 95% of health facilities report routinely on malaria programme performance.
5. ***Objective 5***: By 2020, maintain and strengthen capacity for program management, coordination and partnership to achieve malaria programme performance at all levels.

5.6 Strategic interventions

Objective 1a: All suspected malaria cases should have access to confirmatory

The MoHS endorses parasitological confirmation of malaria to be part of good clinical practice to improve the quality of care of patients. Before treatment is instituted, confirmation should be done using microscopy or Rapid Diagnostic Tests (RDTs) and prompt and effective treatment with ACTs.

The National Malaria Control Programme (NMCP) seeks to strengthen the capacity of health workers both in the public and private health sectors to implement the new Test, Treat and Track (T3) strategy by strengthening capabilities in prompt and targeted malaria case management; integration of quality assurance and quality control systems; incorporating malaria in pregnancy into the maternal and child health strategy; improving the procurement and supply chain for the commodities for malaria prevention and treatment; proactive engagement of the private sector in malaria control, as well as community participation in diagnosing, treating and reporting malaria cases.

Strategy 1.1a: Ensure provision of diagnostics at public, private and community levels

Procurement of RDTs and microscopy reagents and sundries for all health facilities will be done through the National Pharmaceutical Procurement Unit (NPPU). To scale up diagnostic capacity in the private health sector, quality assured RDTs will be provided at a **FREE of COST** basis. Training of Health Workers (hospitals staff, Peripheral Health Unit staff and Laboratory technicians) on RDTs and microscopic diagnosis of malaria is ongoing. Additionally, Community Health Workers were also trained on malaria case management and use of RDTs.
Support supervision will be conducted at all levels including the districts, the private sector and at the community level to strengthen malaria diagnostic capacity.

Objective 1b: All malaria cases to receive effective treatment.

Strategy 1.1b: Ensure provision of effective treatment through the public and private sectors.

Health workers from the public and private health sectors will be trained and re-trained on the revised national treatment guidelines severe malaria management, with particular emphasis on adherence to test results and case management guidelines. The NMCP will ensure regular provision of antimalarials at all levels of the supply chain system.

Standard Operating Procedures, job aids and treatment algorithms will be produced and provided to health workers in the public and private health sectors and Community Health Workers (CHWs) during training and supportive supervision visits, using standard check lists.

Central level teams will routinely provide the District Health Management Teams (DHMTs) with mentorship and supportive supervision skills to support the health workers and the CHWs.
Improving quality of care is a key and as a result the DHMTs will be trained in supportive supervision skills. Trainings will be conducted nationwide.

Strategy 1.1c: Scale up and strengthen Community Case management of malaria

The Ministry of Health and Sanitation adopted a strategy for bringing treatment as close to the households as possible. Community Case Management of malaria (CCMm) was adopted nationwide to facilitate access to and reduce the treatment gap for malaria; The CCMm strategy includes using ACTs to treat malaria after confirmation with malaria RDTs. The NMCP will contribute to this strategy by producing appropriate training materials for the CHWs.

The CHWs will be supervised regularly by trained staff of the NMCP, implementing partners, civil society organisation personnel, DHMTs, PHU staff and community stakeholders. The NMCP ensures the supply of required RDTs and ACTs, medicines, equipment, registers, treatment algorithm and job aides in partnership with other implementing partners

Strategy 1.1d: Strengthen capacity of monitoring the antimalarial treatment efficacy and safety studies

The MOHS will routinely monitor the drugs of choice and alternative medicine to map out trends of drug resistance and safety by conducting regular efficacy and safety studies at established sentinel sites.

Each established sentinel site should be monitored every two years to effectively map out treatment efficacy and safety trends for medicine of choice and alternative option. Taking cognizant of the afore mentioned, there is need to set up baseline data for its efficacy and safety.

Objective 2a: Provide access to 100% of the population at risk with preventive measures by 2017

This strategic plan proposes to use three vector control strategies; long lasting insecticide treated Nets (LLINs), indoor residual spraying (IRS) and larval source management (LSM) will be deployed according to the current risk stratification context. For LLINs, universal coverage for

LLINs mass campaign is planned for by June 2017. Mass distribution campaigns will be repeated every three years and routine LLIN distribution through ANC and EPI will be done nationwide to maintain high levels of coverage during the entire period of the strategic plan. Strengthened Public-Private partnership will serve as an opportunity for resource mobilization to scale up implementation of IRS as recommended by WHO. Another crucial component of the Integrated Vector Management will focus on reduction of larval sources through larviciding and environmental management targeting the 14 health districts.

Strategy 2.1a: Universal Access to LLINs through mass distribution campaign; Universal Access through routine LLINs (ANC and EPI)

Use of WHOPES approved long lasting insecticidal nets (LLINs) will be the primary method for preventing malaria countrywide. This strategic plan proposes to procure LLINs, distribution of the LLINs through mass campaigns and routine distribution through ANC and EPI. BCC for LLINs use and maintenance at households will be conducted prior to mass campaigns and continuously for routine distribution (See also Objective 3).

Furthermore, the NMCP will update and implement the malaria communication plan, monitor coverage and use of LLINs at household level through post distribution and utilization surveys. Scheduled MIS and DHS will provide country level information on LLIN utilisation.

Strategy 2.1b: Strengthen capacity in entomology, epidemiological surveillance, insecticide resistance monitoring and vector behaviour

Vector surveillance and insecticide resistance monitoring are fundamental components of resistance management strategy to ensure Sierra Leone implement a cost effective and efficient control strategy. This strategy will equip the NMCP, partners and the districts with knowledge and skills to implement an informed and evidence-led vector control program in order to achieve maximum impact. Four regional hubs consisting of six sentinel sites will provide annual information on vector composition, vector behaviour and susceptibility of local vectors to insecticides as well as information on LLIN longevity and effectiveness. Additionally, these sites will be linked to the antimalarial efficacy and safety studies.

Objective 2b: To protect at least 80 % of pregnant women and children under one year with IPT 3 by 2020

Strategy 2.2b: Delivery of Intermittent Preventive Treatment (IPT)

IPTp3

IPT has been provided as part of the focussed antenatal care (FANC) package using the recommended drug, Sulphadoxine+Pyrimethamine (SP). The NMCP seeks to implement the MOHS recommendation of full integration of the MiP program within the Directorate of Reproductive and Child Health of MoHS. National policy for IPTp has now been updated in alignment with global policy to ensure that pregnant women receive three or more doses of SP during the 2nd and 3rd trimester of pregnancy (IPTp3).

The MoHS/NMCP will be responsible for updating guidelines and job aids on IPTp, orienting health workers on updated IPT guidelines, producing integrated data collection tools for MIP, procuring SP for the public and private sector and mobilizing communities on antenatal care attendance in collaboration with the Directorate of Reproductive and Child Health.

Intermittent Preventive Treatment for Infants (IPTi)

The Intermittent Preventive Treatment for Infants (IPTi) will be delivered through routine EPI activities at health facilities.

SP-IPTi is the administration of Sulphadoxine+Pyrimethamine for infants at intervals corresponding to routine vaccination schedules for the second and third doses of Penta and measles/yellow fever vaccination usually at 10 weeks,14 weeks and 9 months of age respectively.

Objective 3: To provide knowledge to the population such that at least 80% practice malaria prevention and treatment measures by 2018.

Implementation and coordination of this multi-sectoral malaria control strategy by the Ministry of Health and Sanitation (MoHS) will require a more vibrant BCC approach. Civil society organizations (CSOs) and community based organizations (CBOs) will empower and encourage communities to demand for services, know their health rights, and accountability from duty bearers therefore increasing utilization and value for money.

Advocacy, social mobilization and Information Education (BCC) will be driven by the understanding of changing models that emphasize engagement with various participant groups and strengthen empowerment of households and communities to adopt appropriate behaviour. Activities will seek to reduce malaria morbidity and related mortality by motivating every Sierra Leonean to take recommended actions to prevent, diagnose and treat the disease and to bring about sustainable social and individual behaviour change. It acknowledges challenges in the areas of prevention and vector control, malaria in pregnancy, in infants and case management and proposes strategies for effective communication with relevant stakeholders.

Strategy 3.1: Advocacy, Communication and Social Mobilisation (ACSM) to scale-up demand for malaria prevention and treatment services.

The Malaria communication strategy will be revised, updated and disseminated to address and track the control of policy and resource commitments to effective service delivery in communities using appropriate strategies. The national communication framework will build on current high levels of knowledge about malaria prevention to create awareness about appropriate case management and health care seeking behaviour, while addressing barriers to change in attitudes and practices identified in the Knowledge Attitude and Practices Survey (KAP 2012). Once the communication framework is developed, all partners will be able to buy in such that the communication is structured. This will also define the approaches that will be used to reach the targeted audience for maximum benefit and participation in malaria prevention, treatment and control

In order to increase awareness, knowledge and to stimulate demand for malaria prevention and treatment through Information, Education and Communication,(IEC) materials will be developed, deployed and disseminated to various groups throughout the country with the aim of creating demand, social and behaviour change. NMCP will develop, pre-test, print and disseminate approved IEC materials.

Sierra Leone's approach will target social, individual and environmental and health systems levels through promotion of a supportive society at family, community and policy makers. Communication materials on malaria will be developed or updated and translated in to local languages for behaviour change, namely: (i) At the community levels to mobilize and strengthen community capacity and change social norms; (ii) At the level of engaging the individual and households for behaviour change (iii) At the policy level.

Strategy 3.2; Strengthen behavioural change for malaria at all levels

This strategy will focus on conducting community dialogues, promoting interpersonal communication, film shows, community theatres – containing integrated malaria message in

each episode and engaging community institutions and religious organizations. Community Health Workers (CHWs) will be trained on malaria interventions and will conduct focused household visits-Interpersonal Communication (IPC). The MOH and CSOs/CBOs will conduct community dialogue forums, dramas and other social mobilization interventions to boost malaria control and treatment behaviour among the community. These will include strategic engagement of school pupils to champion malaria intervention messages and act as change agents at home and among peers. Social mobilization and peer mentoring techniques will also be used to facilitate integration of malaria talking points into the activities of the clergy, community leaders, policy makers and the heads of primary and secondary schools.

Objective 4: By 2020, at least 95% of health facilities report routinely on malaria programme performance.

This objective focuses on achieving at least 95% of health facilities routinely reporting on malaria programme performance. All districts will be expected to routinely report on malaria programme performance. All the districts have DHIS2, and District Monitoring and Evaluation Officers. At this level all data from the lower level health centres including the community are compiled and inputted into computer using DHIS2 software which is electronically transmitted to the National level. Secondly, most of the implementation of routine interventions takes place at the district level where activity reports are collected. Thirdly, partners implementing at district level should generate reports and submit them to the district. The district structures will be strengthened to ensure that all HMIS data and activity reports are collected, collated and analysed at all levels. All malaria policies will be guided by coordinated operational research on malaria. To monitor the progress attained and aide planning, regular monitoring through program reviews and surveys will be given a high priority

Strategy 4.1: Improve on malaria data collection and reporting through HMIS (public and community).

Generation, collection, collation and transmission of all health data is the mandate of the Ministry of Health and Sanitation. They collect routine malaria data, which are accessed through the DHIS2. This strategic plan will support training of staff in DHIS2, conduct revision and dissemination of HMIS tools. In addition the plan will strengthen the regular collection, collation, analysis and reporting of malaria data. The NMCP /MoHS will strengthen data collection, management and analysis capacity so that all districts are capable of timely reporting. The plan will also aim at harmonizing integrated supportive supervision tools before its

nationwide scale up. In addition the plan will build capacity for M&E staff in data quality audits. Data quality assessments/audits will also be conducted.

Strategy 4.2 Improve on data demand and use at all levels

Generation of data demand for use in program planning is the core responsibility of the NMCP. This strategic plan will support training of health workers in data use for decision-making and support capacity building for geographical information systems - GIS for use in malaria mapping and programming. Procurement of GIS equipment and software and training of relevant staff will be supported. The plan will support the development and provision of routine updates of malaria stratification maps using routine and survey data to enhance evidence based decision making at district level. The program will develop, disseminate and regularly update a grid of core indicators for regular monitoring of the malaria status in the country. The programme and the districts will also produce and widely disseminate quarterly and annual reports to all stakeholders, including the communities and the media.

Strategy 4.3 Conduct regular malaria surveys/evaluations

In order to assess the program performance in line with the set outcomes and impact, in addition to the routine data, the program together with the RBM partners will conduct periodic surveys and studies. This strategic plan will support the implementation of annual representative health facility (public and private) assessments for the quality of malaria care (uncomplicated and severe) and other surveys including: service availability and readiness assessments (SARA), Malaria Indicator Surveys, DHS and impact evaluations.

Strategy 4.4 Strengthen routine epidemiological, parasitological and entomological capacity for malaria surveillance

Epidemiological surveillance is fundamental in understanding the temporal and spatial distribution of malaria in Sierra Leone, while entomological surveillance enables the country to know the distribution of vectors so as to implement appropriate malaria control interventions. This strategic plan will guide the National Malaria Control Program and partners to conduct sentinel surveillance and train medical entomologists to boost the country's capacity in entomological surveillance. The plan will also guide the conducting of vector behaviour and bionomics studies, therapeutic efficacy test studies at selected sentinel sites every two years (see

also Objective 1), parasite prevalence surveys among children 6-59 months at representative sites nationwide every two years and insecticide susceptibility studies (see also Objective 2). In addition the NMCP in collaboration with the Pharmacy Board of Sierra Leone (PBSL) will support districts to established/strengthen functional systems for Pharmacovigilance of antimalarial drugs.

Strategy 4.5: Develop and Implement Operational Research Agenda to generate evidence for decision making

It is through operations research that the country will adopt informed decisions in the control of malaria. In pursuit of this plan, strengthening research capacity to generate the evidence required for evidence-led policies, inform interventions and programmatic decisions will be a priority. The NMCP in collaboration with Directorate of Research and Non Communicable and Post Graduate Studies, national and international academic institutions and other partners will define a malaria operational research agenda, maintain collaboration with local and international research institutions and provide a forum for research results dissemination. To support the national IVM strategy, the country will seek to conduct operational research evaluations to generate context specific evidence on the effectiveness and operational feasibility of alternative vector control interventions that may provide additional impact to LLINs.

Objective 5: By 2020, maintain and strengthen capacity for program management, coordination and partnership to achieve malaria programme performance at all levels.

The National Malaria Control Programme is expected to have more challenging issues that will need to be addressed during this period 2016-2020. Some of these include new innovative tools such as malaria vaccine that are expected to be introduced after recommendations are passed for implementation in the country. This will require a level of readiness for its adoption, if it is to be implemented. There are also other innovative tools in diagnosis, treatment and vector control that may be introduced during this period.

Strategy 5.1: Strengthen central, district and community levels advocacy for resource mobilisation across all sectors.

During the implementation of this strategic plan, advocacy will continue for the elevation of the position of the NMCP through advocacy meetings with line Ministries, Rollback Malaria Partnership and other key stakeholders. This strategic plan aims to rapidly scale up cost effective interventions in a synchronized manner to national scale to achieve impact. In order to mobilize additional resources that will be required to implement the strategic plan, the programme will hold advocacy meetings and engage all potential funders (public and private) to mobilize resources for malaria prevention and control. The NMCP will develop concept notes, proposals,

and work plans for resource mobilization from the government, development partners and the corporate private sector.

Strategy 5.2: Strengthen human resource development capacity and management to deliver malaria control interventions at all levels

In order to effectively implement this strategic plan, the overall national health system needs to be strengthened. This will entail strengthening the national and districts capacity to deliver malaria control services at all levels. Capacity needs assessment will be conducted and the identified gaps used to advocate for the recruitment of staff to fill the vacant and new positions at all levels and also to address infrastructure (office space and equipment) gaps. The NMCP will support and facilitate districts to hold monthly coordination meetings with partners implementing malaria control activities. The programme will also support DHMT/PHU In-Charges meetings where feedback is provided and key issues relating to malaria control discussed. The NMCP will support annual district integrated health sector planning to include key malaria interventions in their work plans, and conduct regular integrated supportive supervision. Malaria policies, guidelines and job aids will be reviewed, updated and disseminated to the districts.

Strategy 5.3: Strengthen procurement and supply chain management of malaria commodities

Quantification of malaria pharmaceuticals and non-pharmaceuticals is a primary role of National Pharmaceutical and Procurement Unit (NPPU) working in collaboration with the NMCP. While still problematic; the supply of ACTs at health facilities has improved over time with the increase in commodity availability and improvement in national forecasting of supplies. Supply of antimalarials from health facilities to Community Health Workers still remain a challenge. To boost health worker and community confidence in health care interventions, consistent and timely supply of essential medicines and pharmaceutical commodities is essential. Specifically the programme will play a key role in the quantification of RDTs, ACTs, rectal Artesunate, injectable Artesunate, Quinine and other malaria health commodities. Currently, procurement of antimalarials is through the Global Fund supported Voluntary Pooled Procurement (VPP) system.

The Central Medical Stores (CMS) will procure and distribute these commodities to all levels of care through both the ‘pull’ the ‘push’ basic kit system. The NMCP and the District Health Management Teams will conduct integrated supportive supervision and verification of the supply and distribution process in the public, private, private-not-for-profit sectors and community levels. During supportive supervision, appropriate HMIS tools for each level of care, will be supplied by the supervising teams. The NMCP will train health workers on proper quantification,

forecasting and ordering for malaria commodities, general supply chain management. The NMCP will also hold monthly and quarterly review meetings to assess and resolve the PSM challenges and bottlenecks.

Strategy 5.4: Strengthen coordination and partnership

The NMCP is mandated to coordinate all malaria prevention and control activities by all stakeholders in the spirit of the 'three ones'. This strategic plan aims at strengthening the coordination role of the NMCP by conducting malaria partner mapping to identify and define their activities and geographical scope. The NMCP will streamline malaria control efforts to ensure the delivery of a comprehensive package of interventions to targeted populations and avoid duplication.

In addition the programme will ensure that regular programme meetings, thematic group meetings, RBM in-country partnership coordination meetings, quarterly and annual review and planning meetings are held. Beyond national coordination, the NMCP will organize and participate in cross border malaria activities and meetings with neighbouring countries in the region.

In line with the targets of the Ministry of Health and Sanitation stipulated in the Public-Private partnership Strategy frame work drive, the NMCP commits to spearhead a strong partnership through coordination meetings with the private sector specifically to address effective malaria treatment and prevention strategies. This plan has embraced a multi-sectoral approach to ensure implementation and lobbying for support from the private sector. The national malaria control programme will conduct monthly/quarterly coordination meetings and joint supervisions with other ministries and government departments including implementing partners. The NMCP will form and operationalise a private sector co-payment taskforce to facilitate the private sector to access subsidized ACTs. The NMCP will develop/adapt appropriate supportive supervision and monitoring tools for private health providers. In order to fully capture data from the private sector where a sizable population first seeks care, the NMCP will create a platform at district level for private drug shops, pharmacies and clinics to report on malaria HMIS indicators.

Strategy 5.5: Strengthen national capacity for developing evidence based malaria programming

The country will adopt informed decisions through operational research in the control of malaria. In pursuit of this plan, strengthening research capacity to generate the evidence required for evidence led policies, informed interventions and programmatic decisions will be a priority. This plan will establish strong collaborative initiatives with research/academia and other national and

international research institutions. The NMCP in collaboration with research/academic institutions and other partners will define a malaria operational research agenda and provide a forum for research result dissemination/sharing. The Programme will also mobilse the required funding for the research agenda.

In addition, this strategy will see to the introduction of a malaria vaccine following WHO recommendation for its adoption and rolling out.

Strategy 5.6: Rapid adaptation of programme preparedness and response in complex crises or unstable contexts

Sierra Leone experienced the first outbreak of Ebola virus disease (EVD) on the 25th of May, 2014 in the Eastern part of the country[1]. Since then, the Ebola outbreak continues to ravage the country, and as of 28th March 2015, a total of 8,588 confirmed cases; and 3,535 confirmed deaths of Ebola have been reported in all districts throughout the country. The most affected districts have been Bombali and Port Loko Districts in the Northern Province and in rural and urban zones of Western Area.

In response to the Ebola outbreak, the Ministry of Health and Sanitation (MoHS) Task force, in collaboration with its partners, has developed a National Ebola Operational Plan to stop transmission of EVD in the affected districts and beyond. The responses include setting up or strengthening of the following: i) coordination, finance and logistics at all levels; ii) surveillance and laboratory support for early detection, reporting and referral of suspected cases; iii) prompt case management and infection prevention and control including psychosocial support; and iv) social mobilization and public information including restriction of movement and house-to-house active case detection (e.g. Western Area Surge Operations).

Risks and threats

With any plan, there are risks that should take into consideration in as much as possible, plans put in place to minimise the impact of such event, should they occur. While not exhaustive, below are event that could occur that will have impact on the implementation of the malaria control activities.

Table 4: Risk Mitigation

Risk	Mitigation
Case Management • Health providers (public and private) behaviour is one of the important risks to case management for non-compliance with the policies and guidelines. Despite continued drive to encourage testing before treatment most providers give medications based on clinical symptoms only; • Non adherence to negative test result is also a major risk since this leads to over consumption, misuse of antimalarials and misdiagnosis for other ailments.	• NMCP in collaboration with partners, has come up with policies and guidelines on malaria case management; • NMCP in collaboration with partners provided training on the revised policies and treatment guidelines. This training will be repeated annually and on ad-hoc basis to ensure that, the majority of health care providers have heard the message that testing should be done before a diagnosis of malaria is made and that the laboratory test result can be trusted; • Using person-to-person campaign will be explored.
Case Management: Community level • The rolling out of diagnosis to the community level using RDTs may be fraught with human capacity challenges due to attrition of CHWs who are essentially volunteers	• The NMCP in collaboration with partners have trained CHWs on the use of RDTs and malaria case management; • This training is repeated annually and will be expanded using the revised training manual, treatment algorithms and job aids; • NMCP in collaboration with partners will provide both non-financial and financial incentive to CHWs
Financial • Weak financial accounting software; Weak asset management • Inadequate insurance of assets.	• Installation of robust financial accounting software; • Maintenance/regular update of asset register; • Assets tracking mechanism and control (e.g. tagging, strict application of internal procedures on asset use); • Proper and adequate insurance system.

Risk	Mitigation
Surveillance, Monitoring and Evaluation • The collection of district level (DHMT) data via DHIS2 is threatened by incompleteness and lack of timeliness; • Lack of backup systems for data at DHMT and hospitals • The collection of district level hospital (private and public) data is threatened by incompleteness and timeliness; • Stock out of data collection and reporting tools at service delivery point; • Supervision and monitoring of activities are uncoordinated and irregular mainly at district level	• MoHS and partners will train DHMTs to capture data completeness and timeliness. A reward system for completeness and timeliness needs to be established to encourage districts to report data completely and timely; • MoHS and partners to ensure maintenance and regular upgrade of the DHIS2 software; • MoHS and partners to provide reliable backup systems for data at DHMTs and hospitals; • MoHS and partners will ensure proper M&E systems including training of hospital staff on quality data collection and reporting; • MoHS and partners to ensure regular and adequate supply of data collection and reporting tools at service delivery point; • MoHS to strengthen coordination and support of supervision and monitoring of activities at all levels
Long Lasting Insecticide Treated Net: • The failure of LLINs users to sleep under their LLINs; • Absence of insecticides resistance monitoring of LLINs in the presence of large scale use of insecticides for malaria control	• Intensify and sustain IEC/BCC on the importance of sleeping under LLINs every night can help decrease the misuse of nets; • Establish entomological and insecticides resistance monitoring system.
Programme management funding: • Reliance on external donor funding puts this plan at risk of not fulfilling its accelerated malaria control efforts especially with the Global Fund's new funding models.	• Develop a Malaria Business (investment) Plan that will help to mobilise resources domestically and also from donors who are still interested in helping to sustain the gains made in malaria control in Sierra Leone; • Lobby GOSL parliament and encourage cooperate private sectors to invest in malaria based on an investment case.

Risk	Mitigation
Procurement and supply chain issues: • Stock out of antimalarial commodities at service delivery point; • Over stock and expiry of antimalarial health products; • Theft and diversion • Inadequate storage facilities	• Proper quantification and estimation of needs; • Management of information and quality of data; • Supply chain management and distribution; Adhere to the NMCP distribution plan process • Renovation and, or expansion of storage facilities
Human resource • This plan rides on the success of the health system but there are shortages of skilled staff at all levels	• Include malaria training in pre-service curriculum and undertake planned refresher training for staff at all level.
Recurrence of Ebola virus disease outbreak: • Evidence shows that countries that have experienced the EVD outbreak have had resurgence of the virus outbreak. The country is very aware of this possibility.	• Strengthen surveillance system
• Partners not aligned to the plan	• Reinforce the national compact and the introduced/launched Service Level Agreement (SLA) between MoHS and partners

CHAPTER V1: IMPLEMENTATION PLAN

6.1 Implementation Plan

Table 5: Implementation plan

Level of implementation	Actor	Role
National	Parliamentarians	• Advocate for adequate resource allocation to malaria control efforts; • Encourage cooperate private sectors to invest in malaria based on an investment case; • Engage in community mobilisation and sensitisation; • Oversight role for the implementation.
	Ministry of Finance	• Resource mobilization, budget allocation and financing the MSP; • Timely disbursement of allocated fund
	Ministry of Health and Sanitation, NMCP	• Policy formulation, supervision, capacity building, quality assurance, setting standards, guidelines, partner coordination, planning, reviews, surveys, monitoring and evaluation, advocacy and resource mobilization, surveillance, operational research.
	Other Government line ministries (education, agriculture, Trade and Industry, Mineral Resources, Tourism, SLP, RSLAF, Youth, etc.)	• Foster a multi-sectoral partnership with MoHS in malaria control leveraging on their respective mandates
	WHO	• Technical guidance in the implementation of malaria control interventions; • Resource mobilisation; Evidence-based norms/standards to guide the implementation of interventions; • Assistance in conducting monitoring and evaluation activities such as surveys and operational research.

Level of implementation	Actor	Role
	UNICEF Bilateral & Multilateral Partners	• Technical guidance in the implementation of malaria reduction interventions; • Resource mobilisation; • Assistance in conducting monitoring and evaluation activities such as surveys
National	Bilateral & Multilateral Partners	• Technical assistance in sourcing, procurement and distribution of commodities; Financial/commodity support to implement malaria reduction interventions; • Assistance in conducting monitoring and evaluation activities such as surveys and operational research
	NGOs/INGOs	• Support implementation of malaria prevention, treatment and control activities
	Corporate entities.	• Provide financial support
	Universities, academia and research institutions	• Conduct research to provide technical evidence for policy formulation and capacity building
	CSOs	• Assist in advocacy, community mobilisation and sensitisation; • Monitor implementation activities
	Religious Leaders	• Assist in advocacy and sensitisation
	Entertainers	• Assist in advocacy and sensitisation
District level	Local government District/City Council	• Support the decentralized districts, advocacy, resource and community mobilization, supervision of implementation, community engagement; • Formation and enforcement of bye-laws; • Coordination at local level; • In cooperate malaria programme activities in the district/city development and health comprehensive plans.

Level of implementation	Actor	Role
	DHMTs	• Coordination, planning, implementation and management, supervision and monitoring of health facilities, private sector/NGO, community activities including CHWs; data management, community engagement; • Capacity building among others.
	NGOs	• Support implementation of malaria prevention, treatment and control activities.
	Peripheral Health Units	• Implementation and supervision of CHWs; • Capacity building; • Support facility management committee; • Data collection and transmission to district; • Community mobilisation and sensitization; • Conduct outreach activities.
	Facility Management Committee	• Strengthen link between community and health facility; • Dissemination of health policies to communities; • Make visits to health facilities to supervise as per the
District Level	Facility Management Committee	checklist prepared by MoHS; • Provide feedback to health workers on client satisfaction with services delivered
Community	Community Health Workers	• Malaria case management, Health promotion, Data collection and reporting

6.2 Implementation and Implementation Management

The implementation of this strategic plan will be in compliance with the established policy, regulatory, institutional, planning, financing and M&E framework. The implementation will be guided by the stated implementation principles and supported with identified coordination mechanism. In addition to specifically prevent and control malaria, the strategic plan looks towards strengthening the health system and community system.

Malaria control in Sierra Leone requires a fully inclusive multi-sectioral partnership control. The MoHS has statutory responsibility of malaria prevention and control and will lead the multi-sector response to malaria. The NMCP under the MoHS will coordinate the following: development of norms, standards, policies, guidelines and tools; planning; resource mobilisation and management; capacity building including technical support; monitoring and evaluation and operational research

This strategic plan will be implemented through a broad collaborative nationwide coalition by all stakeholders will participate within the framework of the malaria strategic plan 2016-2020. Working arrangement will be used to strengthen "bottom top" approaches to foster decentralisation of service delivery at district and chiefdom levels to increase efficiency, effectiveness and equity. Coordination and supervision of the implementation will be through the national established partnership framework.

Success in the implementation of this strategic plan is based on the transparency and involvement of a broad range of stakeholders at household, community, district and national levels. The traditional institutions, civil society groups, village health committee, religious groups, women's support groups, youth groups among others shall also be involved in the drive towards controlling malaria.

The Rollback malaria (RMB) partnership framework will be the mechanism through which the malaria control programme of the MoHS performs its coordination task, by rallying all implementing and development partners to adhere to the "three ones": one country coordination mechanism through national coordination framework; one country malaria control strategic plan (SLMSP 2016-2020), and one country monitoring and evaluation mechanism. The RBM partnership framework will be strengthened to fulfil its coordination task at national and subnational levels.

Implementation of this strategic plan will mainly be at the district level in line with implementation strategy. The District Medical Officer (DMO) with support from members of the DHMTs will be the overall responsible person for the coordination and supervision of the implementation of malaria prevention and control activities at district level. However, just like at the national level, every district will establish and/or strengthen a multi-sectoral partnership

taskforce chaired by the DMO. The partnership taskforce membership will be derived from government departments, relevant NGOs/INGOs, private sector, CSOs, traditional leaders, religious leaders and other stakeholders. Malaria taskforce supports planning and monitoring of malaria implementation at the district level.

This strategic plan aims at strengthening the role of communities in malaria prevention and control. Community involvement in malaria control is mainly through the participation of individual members of the communities, such as CHWs and in some cases by civil society organizations. The community structures facilitate linkages between the communities and the health system at the community level. Their roles include dissemination of information on public health issues, and mobilization of communities to participate in health sector planning, monitoring, distribution of LLINs and SP for IPTp, serve as spray operators for IRS, health/malaria education, malaria diagnosis using RDTs, and provision of malaria treatment within the communities. A National CHW policy and strategy exists that defines and standardize the package of support, incentives, and training for CHWs throughout the country**.**

Role of the corporate private sector for the malaria reduction efforts

Sierra Leone has not invested substantially in using the private sector and corporate companies in malaria prevention and control. Active involvement of the private sector can result in an excellent return on investment, with significant reductions in malaria-related illnesses, deaths, worker absenteeism and malaria related spending. The private sector is a critical partner and this strategic plan will harness its contribution through partnership meetings and their corporate social responsibility.

Resource mobilization and financing

While Sierra Leone's Health Budget has been increasing in the past ten years, the National Health budget remains at 12% (2013), less than the 15% recommended by Abuja Declaration 2000. This implies that the domestic contribution for malaria prevention and control in Sierra Leone is minimal. There is a need to increase domestic funding if the malaria reduction strategic plan is to succeed. The Ministry of Finance, Planning and Economic Development (MoFED) should prioritize malaria reduction by increasing budgetary allocation to the MoHS and thus the national malaria control programme. In addition, the Government of Sierra Leone and the MoHS will work closely with a number of partners to jointly finance the SLMSP.

Further success in malaria reduction in Sierra Leone requires a multi-sectoral framework that identifies actions to address the social and environmental determinants of malaria including climate change, and calls for malaria strategies to be complemented by a broader development approach.

The successful implementation of SLMSP will also depends on timely and consistent availability of adequate resources. Significant progress has been made in governance and financial accountability related issues by strengthening leadership structures, and improving internal auditing and procurement systems. Financial and fiduciary systems will be further strengthened

and reporting on grant performance will be a routine to stimulate confidence from various partners.

Within the implementation framework, the private sector is also looked upon as potential major contributor to resource pool either through direct contributions or through their involvement in the sales and distribution of antimalarials commodities at affordable prices through social marketing within the context of Public-Private Partnership (PPP).

Advocacy meetings to present the malaria control business (investment) plan will be held with partners, institutions and agencies to mobilise resources to support malaria prevention and control interventions.

Improving capacity for procurement and supply chain management

In terms of procurement of antimalarial commodities, this strategic plan builds on an already existent operational procurement system. Procurement and supply management of pharmaceuticals, medical and non-medical health products in Sierra Leone is the responsibility of the National Procurement and Pharmaceutical Unit (NPPU) in the Ministry of Health and Sanitation, The NMCP in collaboration with partners maintain a strong system for malaria commodities planning, quantification, forecasting, procurement stock management and monitoring of rational use of drugs. Antimalarial drugs are distributed to hospitals and PHUs through a combination of “push” and “pull” strategies. The MoHS/NMCP will collaborate with various partners (WHO, UNICEF, GFATM, the NPPU to ensure the following:

- Develop procurement and supply management plan for malaria commodities;
- Build the capacity of health workers in procurement and supply chain management, specifically in forecasting and quantification of malaria commodities;
- Conduct reviews of the distribution systems for diagnostics, medicines and other commodities to determine ways of strengthening the Procurement Supply Management system;
- Support national and international efforts aimed at strengthening the procurement and supply system and where feasible, utilize complementary mechanisms in the delivery of commodities.
- Build new and renovate storage facilities at national and district levels
- Strengthen QA/QC systems including field supervision and linkage with an external quality assurance programme
- Strengthen the LMIS for effective monitoring of service and quantification of commodities

CHAPTER VII: PERFORMANCE MEASUREMENT

The monitoring, evaluation and performance assessment framework to be used in measuring progress in the implementation of the SLMSP is described in the performance framework and will be further detailed in the revised Sierra Leone malaria monitoring and evaluation plan 2016-2020. There will be two main M&E responsibilities: tracking progress for the program in implementing the specific components of the full package of malaria reduction interventions; and tracking progress in meeting targets and milestones

7.1. Tracking implementation progress

The tracking of the progress in meeting the targets and milestones for the SLMSP will utilize the revised National Malaria M&E Plan 2016-2020, but will also focus on strategic areas to ensure that prioritized activities are appropriately addressed. Monitoring implementation progress will be done through a joint collaborative approach by the Ministry of Health and Sanitation, the Ministry of Finance, Planning and Economic Development and malaria partners and stakeholders using regularly planned monitoring events including:

- RBM partnership reviews to be conducted quarterly.
- National Joint Annual Assessments/Reviews.
- A Mid-Term Review to be conducted in 2018.
- An End-term Malaria Strategic plan Review/Evaluation in 2020

7.2. Measuring and achievement of outputs, outcomes and impact

The malaria control strategic plan will be evaluated based on several indicators, including those for strategic re-orientations and those for performance assessment detailed in **Annex 1.** These indicators will also be included in the revised National Malaria M&E Plan 2016-2020. The methods for tracking of progress for program actions will be fully detailed for impact, outcome, output, process and inputs in the revised Sierra Leone National Malaria Control M&E Plan. The tracking of achievement of outputs, outcomes and impact will use a variety of sources of information including: routine HMIS, population-based household surveys (SLDHS and MIS), other surveys such as: health facility surveys, special studies, including drug and insecticide resistance studies and administrative information systems (e.g., commodity procurement and distribution data). HMIS will provide continuous data from patient care settings; while surveys will compliment this data with population-based information but only on an intermittent basis (SLDHS every5 years; Malaria indicator Surveys [MIS] every 2-3 years); Quality of care health facility surveys will also be conducted and iCCM strategy reviews and special studies will be directed at specific issues as the need arises. Information will be compiled and synthesized and feedback provided through periodic reports and various presentations to summarize the information obtained. This collective documentation will be made available to partners, donors

and the communities through various opportunities and channels including meetings/workshops, annual review and planning meetings.

7.3. The Performance Framework

The monitoring, evaluation and performance assessment framework to be used in measuring progress in the implementation of the SLMSP is described in the performance framework and will be further detailed in the revised Sierra Leone National Malaria Control Monitoring and Evaluation Plan 2016-2020. There will be two main M&E responsibilities: tracking progress for the program in implementing the specific components of the full package of malaria reduction interventions; and tracking progress in meeting targets and milestones.

7.4 Strategic Plan Performance Framework

This strategic plan proposes set of critical indicators which will allow the tracking of performance towards achieving outcomes and impact enshrined in the goals and objectives. The agreed targets and outcome and impact indicators are outlined in the table below. The details, including definitions, of these indicators are outlined in the monitoring and evaluation plan of this plan.

CHAPTER VIII: BUDGET AND FINANCIAL PLAN

Table 6: Budget summary by objective and interventions

Summary Budget breakdown by Objective of the Sierra Leone National Malaria Strategic Plan 2016-2020 (US $)									
No	Objective	Intervention	Year 1	Year 2	Year 3	Year 4	Year 5	Total	%
1	**OBJECTIVE 1a :** All suspected malaria cases have access to confirmatory diagnosis	Case Management	5,631,648.82	5,270,488.73	4,887,750.86	4,482,582.04	4,054,099.93	24,326,570.37	19.3%
2	**Objective 1b:** All malaria cases to receive effective treatment	Case Management	7,863,761.59	5,466,292.84	6,484,146.77	5,740,255.30	5,787,545.91	31,342,002.41	24.9%
3	**Objective 2a:** Provide access to 100% of the population at risk with preventive measures by 2017 and Objective 2b: To protect at least 80% of pregnant women and children under one year with IPT3 by 2020	Prevention:Vector Control, MiP, IPTi	17,741,763.15	2,164,075.75	2,256,849.94	18,894,345.58	2,429,499.89	43,486,534.31	34.5%
4	**OBJECTIVE 3:** To provide knowledge to the population such that at least 80% practice malaria prevention and treatment measures by 2018.	IEC BCC	4,505,258.87	1,137,682.50	1,197,010.16	1,582,860.15	1,137,682.50	9,560,494.18	7.6%
5	**Objective 4:** By 2020, at least 95% of Health facilities report routinely on malaria programme performance	Surveillance and M&E	1,673,379.31	1,432,785.53	1,475,263.72	1,458,015.32	1,475,263.72	7,514,707.61	6.0%
6	**Objective 5:** By 2020, maintain and strengthen capacity for programme management, coordination and partnership to achieve malaria programme performance at all levels.	Programme Management	2,460,771.01	1,712,388.70	1,936,980.02	1,728,921.89	1,868,643.30	9,707,704.93	7.7%
Total			**39,876,582.75**	**17,183,714.06**	**18,238,001.47**	**33,886,980.28**	**16,752,735.26**	**125,938,013.81**	**100.0%**

Table 7: Budget summary by cost category

Summary Budget breakdown by Cost Category of the Sierra Leone National Malaria Strategic Plan 2016-2020 (US $)								
No	Category	Year 1	Year 2	Year 3	year 4	Year 5	Total	%
1	Human Resources	517,359.36	517,359.36	517,359.36	517,359.36	517,359.36	2,586,796.81	2.1%
2	Technical Assistance (TA)	18,925.53	8,936.17	8,936.17	18,925.53	8,936.17	64,659.57	0.1%
3	Training	5,210,099.10	285,245.05	1,665,355.72	339,036.12	1,597,269.72	9,097,005.71	7.2%
4	Health Products and Health Equipment	15,743,593.01	4,574,157.38	4,407,208.17	16,089,120.55	4,039,234.86	44,853,313.98	35.6%
5	Medicines and Pharmaceutical Products	6,459,826.63	6,090,989.22	5,698,228.85	5,290,998.02	4,851,874.29	28,391,917.01	22.5%
6	Procurement and Supply Management Costs (PSM)	3,282,211.92	2,162,724.58	2,084,475.49	3,130,519.77	1,916,091.34	12,576,023.10	10.0%
7	Infrastructure and Other Equipment	-	-	-	913,873.90	-	913,873.90	0.7%
8	Communication Materials	1,277,831.06	1,019,899.52	1,019,899.52	1,277,831.06	1,019,899.52	5,615,360.69	4.5%
9	Monitoring and Evaluation	5,523,466.01	1,748,043.69	1,978,668.21	5,473,516.04	1,877,633.15	16,601,327.11	13.2%
10	Planning and Administration	905,492.66	603,177.37	683,588.27	658,369.39	747,614.13	3,598,241.82	2.9%
11	Overheads	937,777.46	173,181.70	174,281.70	177,430.53	176,822.70	1,639,494.10	1.3%
TOTAL		**39,876,582.75**	**17,183,714.06**	**18,238,001.47**	**33,886,980.28**	**16,752,735.26**	**125,938,013.81**	**100.0%**

Table 8: Budget summary for combined commodity cost

Combined Total Costs (Commodity cost, Procurement fee and Freight & Insurance cost)	2016	2017	2018	2019	2020	Intervention Lifespan Costs
Objective 1a: RDTs Health Facility Level	3,408,327.65	3,189,750.12	2,958,113.50	2,712,901.46	2,453,580.00	14,722,672.73
Objective 1a: RDTs CHWs	453,390.33	424,314.22	393,500.92	360,881.77	326,385.71	1,958,472.95
Objective 1b: ACTs Health Facility Level	4,136,583.47	3,871,302.58	3,590,172.27	3,292,565.88	2,977,835.32	17,868,459.53
Objective 1b: ACTs CHW Level	554,421.05	518,865.79	481,186.25	441,298.44	399,115.50	2,394,887.02
Objective 2a: LLINs Routine Distribution	1,808,101.85	1,853,304.40	1,899,637.01	1,947,127.93	1,995,806.13	9,503,977.32
Objective 2a: LLINs Mass Distribution	12,059,511.01	-	-	12,986,774.35	-	25,046,285.36
Objective 2b: IPTp3 SP ANC Delivery	141,644.78	168,535.68	175,940.21	194,853.40	215,021.37	895,995.44
Objective 2b: IPTi3 SP EPI Delivery	136,765.47	140,184.61	162,738.68	186,332.84	200,138.34	826,159.93
Objective 1a: Artesunate suppository	159,763.22	149,517.54	138,659.72	127,165.56	115,010.03	690,116.06
Objective 1a: Artesunate Injection	1,230,176.82	1,151,285.05	1,067,679.83	979,174.79	885,577.20	5,313,893.68
Objective 1a: Quinine tablet	208,174.80	194,824.46	180,676.49	165,699.36	149,860.45	899,235.55
Objection 1a: Gloves for CHWs	306,528.57	296,407.44	285,448.10	273,909.29	261,940.84	1,424,234.24
Annual Cumulative Costs	**24,603,389.03**	**11,958,291.86**	**11,333,752.97**	**23,668,685.06**	**9,980,270.90**	**81,544,389.83**

ANNEXES

Annex 1: Participants for the development of the Malaria Strategic Plan 2016-2020

Participants in the Malaria Strategic Plan 2016-2020 development process		
NO	**DESIGNATION**	**DIRECTORATE/PROGRAMME/ORGANISATION**
1	Chief Medical Officer	Ministry of Health and Sanitation
2	Deputy Chief Medical Officer 1	Ministry of Health and Sanitation
3	Deputy Chief Medical Officer 2	Ministry of Health and Sanitation
4	Chief Nursing Officer	Directorate of Nursing Services
5	Registrar	Nursing and Midwife Services
6	Representative	Moyamba District Council
7	Representative	Western Area City Council
8	Director	Disease Prevention and Control
9	Director	Reproductive Health Services
10	Director	Health Systems, Policy Planning and Information
11	Director	Primary Health Care
12	Director	Environmental Health Services
13	Director	Drugs and Medical Supplies
14	Director	Food and Nutrition Services

NO	DESIGNATION	DIRECTORATE/PROGRAMME/ORGANISATION
15	Director	Financial Resources
16	Director	Internal Audit
17	Manager	Procurement Division
18	Programme Manager	Reproductive Health and Family Planning
19	Programme Manager	EPI/MCH
20	Programme Manager	Health Education Division
21	Programme Manager	HIV/AIDS
22	Programme Manager	NTDs
23	Programme Manager	Integrated Disease Surveillance and Response
24	Programme Manager	TB/Leprosy Control Programme
25	Programme Manager	School and Adolescent Health
26	Programme Manager	Laboratory Services
27	Registrar	Pharmacy Board of Sierra Leone
28	Representative,	Office of Community Health Officer (CHO)
29	Representative,	National Pharmaceutical Procurement Unit (NPPU)
30	Principal Recipient Coordinator,	GF R10, Malaria /TB Grant
31	Representative	CARDNO (Fiscal Agent for GFR10-Malaria/TB Grant
32	Representative	University of Sierra Leone
33	Physician Specialist	Connaught Hospital

NO	DESIGNATION	DIRECTORATE/PROGRAMME/ORGANISATION
34	Paediatrician Specialist	Ola During Children's Hospital
35	Specialist Gynaecologist/Obstetrician	Princess Christiana Maternity Home (PCMH)
36	Country Representative	WHO Country Office
37	Country Representative	UNICEF Country Office
38	Representative	UNFPA
39	Representative	Department F International Development
40	Health Coordinator	Sierra Leone Red Cross Society (SLRCS)
41	Country Director	CARE International
42	Country Director	Concern Worldwide
43	Medical Coordinator	MSF-Belgium
44	Country Manager	Tony Blair Faith Foundation
45	Health Manager	UMC
46	Country Manager	Logistics Solution Services
47	Health Manager	Pikin to Pikin
48	Country Director	IRC
49	Country Director	IMC
50	Health Coordinator	BRAC
51	Country Director	Plan SL
52	Country Director	Save the Children

NO	DESIGNATION	DIRECTORATE/PROGRAMME/ORGANISATION
53	Health Coordinator	Child Fund
54	Country Director	CRS
55	Representative	Christian Health Association Sierra Leone (CHASL)
56	Programme Coordinator	Community Action for the Welfare of Children (CAWeC)
57	Health Coordinator	SNAP/USAID
58	Medical Coordinator	Medical Research Council
59	Chairman	Country Coordinating Mechanism
60	Health Manager	World Vision
61	Representative	Civil Society Organization
62	Project Director	Food, Health, and Agricultural Development Association
63	Country Manager	Timis Mining Company
64	Country Manager	TOTAL Filling Station
65	Representative	London Mining Company
66	Senior Project Accountant	Project Management Unit (PMU)
67	Representative	Private Hospital
68	Medical Coordinator	MSF-B
69	Country Manager	Tony Blair Faith Foundation
70	Country Director	CRS

NO	DESIGNATION	DIRECTORATE/PROGRAMME/ORGANISATION
71	Representative	Christian Health Association Sierra Leone
72	Representative	Sierra Leone Pharmaceutical Association
73	Health Manager	World Vision
74	Representative	HFAC
75	Joint Commander	34 Military Hospital
76	Medical Superintendent	Police Hospital, Kingtom
77	Medical Superintendent	St. John of God Hospital, Mabeseneh, Lunsar
78	Medical Superintendent	Makeni Regional Hospital
79	Medical Superintendent	Kambia Government Hospital
80	Medical Superintendent	Kabala Government Hospital
81	Medical Superintendent	Magburaka Government Hospital
82	Medical Superintendent	Koidu Government Hospital
83	Medical Superintendent	Bo Government Hospital
84	Medical Superintendent	Kenema Government Hospital
85	Medical Superintendent	Pujehun Government Hospital
86	Medical Superintendent	Kailahun Government Hosptial
87	Medical Superintendent	Port Loko Government hospital
88	Medical Superintendent	Moyamba Government Hospital
89	Medical Superintendent	Bonthe Government Hospital

NO	DESIGNATION	DIRECTORATE/PROGRAMME/ORGANISATION
90	District Medical Officer	District Health Management Team, Western Area
91	District Medical Officer	District Health Management Team, Moyamba
92	District Medical Officer	District Health Management Team, Bombali District
93	District Medical Officer	District Health Management Team, Tonkolili District
94	District Medical Officer	District Health Management Team, Port Loko District
95	District Medical Officer	District Health Management Team, Kambia District
96	District Medical Officer	District Health Management Team, Koinadugu District
97	District Medical Officer	District Health Management Team, Kono District
98	District Medical Officer	District Health Management Team, Bo District
99	District Medical Officer	District Health Management Team, Kenema District
100	District Medical Officer	District Health Management Team, Kailahun District
101	District Medical Officer	District Health Management Team, Pujehun District
102	District Medical Officer	District Health Management Team, Bonthe District
103	Principal	School of Midwifery
104	Coordinator	MCH Training Centre - (Bombali District; Makeni)

Annex 2: List of Participants by thematic groups

NO	NAME	DESIGNATION	DIRECTORATE/PROGRAMME/ ORGANISATION
CASE MANAGEMENT TEAM			
1	Anitta Kamara	Senior Case Management Focal Person	National Malaria Control Programme
2	Dr. J N Kandeh	District Medical Officer	District Health Management Team, Western Area
3	Alpha S. Swarray	Microbiologist	Connaught Central Laboratory
4	Doris Harding	Deputy Laboratory Manager	Public Health Reference Laboratory Services
5	Dr. Ngozi Kennedy	Health Specialist	UNICEF Country office
6	Amara Bahun	Project Officer	Pikin to Pikin Movement
7	William T. Pessima	Malaria Focal Point	District Health Management Team, Western Area
8	Mabinty Tarawallie	IMNCI Focal Person	Child Health /EPI Programme
9	Dr. James Russell	Physician Specialist	Connaught Hospital, Freetown
10	Haja Fatmata Mansaray	Deputy Chief Nursing Officer	Directorate of Nursing Services
11	Musa Sesay	Programme Officer	Child Fund, Sierra Leone
12	Santigie Bendu	Programme Officer	PLAN Sierra Leone
MONITORING AND EVALUATION TEAM			
1	Musa Sillah-Kanu	Senior M&E Officer	National Malaria Control Programme
2	Frederick Yamba	M&E Officer	National Malaria Control Programme
3	Thomas Ansumana	M&E Officer	National Malaria Control Programme
4	Nelson Fofana	Data Entry Clerk	National Malaria Control Programme
5	Philip Brewah	Data Entry Clerk	National Malaria Control Programme
6	Magdalene Nze-Daniel	Data Entry Clerk	National Malaria Control Programme
7	Edward McEwen	M&E Officer	Directorate, Policy Planning and Information
8	Bockarie Sesay	M&E Officer	Catholic Relief Services (CRS)

MALARIA IN PREGNANCY TEAM			
1	Wani K. Lahai	IEC/BCC Focal Point - NMCP	National Malaria Control Programme
2	Christiana Massally	District Health Sister	District Health Management Team, Western Area
3	Ngadi Lombi	Partnership Focal Point - NMCP	National Malaria Control Programme
ADVOCACY, INFORMATION, EDUCATION, COMMUNICATION AND COMMUNITY MOBILIZATION TEAM			
1	Nancy Mansaray	BCC Coordinator	Global Fund Round 10 Malaria grant Catholic Relief Services
2	Phileas Jusu	Director of Communications	United Methodist Church (UMC)
3	Roselyn John	Programme Officer	TBFF
4	Regena Kain	Malaria Programme Coordinator	BRAC
5	Ngadie Lombi	Partnership Focal Person	National Malaria Control Programme
6	Wani Kumba Lahai	IEC/BCC Focal Person	National Malaria Control Programme
PROCUREMENT AND SUPPLY MANAGEMENT TEAM			
1	Marie I Kamara	PSM Officer/Pharmacist	National Malaria Control Programme
2	Mohamed Kamara	LMIS officer	Central Medical Stores (CMS), MOHS
3	Daniel Sowa	HFAC Officer	Health For All Coalition (HFAC)
PROGRAMME MANAGEMENT TEAM			
1	John Seppeh	M&E Officer	National Malaria Control Programme
2	Abu Kamara	PR Coordinator	Global Fund, TB/Malaria Grant
3	Hassan Bangura	Senior Project Accountant	Global Fund, TB/Malaria Grant
4	Samuel J. Smith	Programme Manager	National Malaria Control Programme
5	Michael Gray	Finance Officer	National Malaria Control Programme
6	Agnes During	Programme Administrator	National Malaria Control Programme

Annex 3: Table showing key players in malaria control

No.	Name of RBM Partner	Thematic Areas						
		Governance & Programme Management	Malaria Vector Control	Malaria Disease & Case Management	Malaria Prevention & Treatment In Pregnancy	Advocacy, IEC/BCC & Community Mobilisation	Epidemiology, Surveillance, M&E & Operational Research	PSM
1	World Health Organisation (WHO)							
2	United Nations Children's Fund (UNICEF)							
3	Catholic Relief Services (CRS)							
4	World Vision Sierra Leone							
5	Sierra Leone Red Cross Society (SLRCS)							
6	Medical Research Centre (MRC)							
7	Medicines San Frontiers (MSF)							
8	Bangladesh Rehabilitation Assistance Committee (BRAC)							
9	United Nations High Commission for Refugee (UNHCR)							
10	United Methodist Church							
11	Health and Social Development Association (HASDA)							
12	Nets for Life (Anglican Diocese of Bo).							

No	Name of RBM Partner	Thematic Areas						
		Governance & Programme Management	Malaria Vector Control	Malaria Disease & Case Management	Malaria Prevention & Treatment In Pregnancy	Advocacy, IEC/BCC & Community Mobilisation	Epidemiology, Surveillance, M&E & Operational Research	PSM
13	Plan Sierra Leone							
14	Pikin to Pikin							
15	Save the Children							
16	International Rescue Committee (IRC)							
17	CARE							
18	Food Health and Agricultural Development Association (FHADA)							
19	Sustainable Nutrition and Agriculture Promotion (SNAP)							
20	ABC							
21	Tony Blair Faith Foundation (TBFF)							
22	Pharmacy Board of Sierra Leone (PBSL)							
23	Community Action for the Welfare of Children (CAWeC)							
24	Logistics Solution and Services (LSS)							

No	Name of RBM Partner	Thematic Areas						
		Governance & Programme Management	Malaria Vector Control	Malaria Disease & Case Management	Malaria Prevention & Treatment In Pregnancy	Advocacy, IEC/BCC & Community Mobilisation	Epidemiology, Surveillance, M&E & Operational Research	PSM
25	ChildFund SL							
26	Concern Worldwide-Sierra Leone							
27	Department for International Development (DfID)							
28	MIRAL pharmaceuticals							

Source: NMCP/RBM partnership database 2015

Annex 4: Malaria Programme SWOT analysis for various interventions

CASE MANAGEMENT			
STRENGTHS	**WEAKNESSES**	**OPPORTUNITIES**	**THREATS**
• Tax waiver for all anti-malaria products, LLINs; • There are policy documents training guidelines for all cadres of health personnel and trainings for all public and private health workers on malaria case management and RDT have been accomplished; • Tax waiver for all anti-malaria products, LLINs; • There is availability of quality assured ACTs in all public HFs, and some private HFs; • Decentralized case management of malaria health systems from National, district to community;	• Low level of testing and poor adherence to negative test results; • Weak pharmacovigilance system for antimalarials • Poor infrastructure, transport facilities could hamper the prompt and appropriate case management of severe malaria;	• Establishment of a national reference laboratory; • Strengthening the QAQC system for malaria diagnostics; • FHCI to ensure universal access to care and commodities • A network of trained community health workers; • Continuous monitoring of the safety and effective use of first and alternative recommend antimalarial medicines in the treatment of uncomplicated malaria	• Treatment interruptions (poor adherence to treatment regimen) • Use of monotherapy including, chloroquine, amodiaquine, artisemithine derevatives (policy violation); • Antimalarial drugs are not subsidized in the private sector; • Continued use of non-recommended malaria medicines in the treatment of malaria such as SP, CHQ and other mono-therapies could lead to resistance
• MIP activities in-cooperated into the Reproductive Health Services; • SP tablets available at health facilities and in the communities; • IEC materials available on MIP.	• IPTp Coverage limited to Government health facilities at ANC and outreach points; • Knowledge gap on complications of MIP among Pregnant women; • Weak Public /Private partnership;	• ANC coverage increasing and IPT is part of integrated package. • Outreach services in the district health facilities • Willingness of TBAs to do IPT	• Emerging drug resistance of Antimalarial medicines. • Inadequate funding especially for antimalarial commodities. • Medical Practitioners may be reluctant to use the recommended medication during the first trimester

INTEGRATED VECTOR MANAGEMENT			
STRENGTHS	**WEAKNESSES**	**OPPORTUNITIES**	**THREAT**
• Availability of a network of CHW including TBAs trained on identification of danger signs in pregnancy and early referrals. • Involvement of local authorities in the formation of by-laws on pregnancy related issues and clinic attendance. • Integration of SP and ITN in the ANC package • Integrated supportive monitoring and supervision at all levels.	• Limited funding for effective programme management; • Sometimes Stock out of Antimalarial medicines at health facilities; • Adverse effects (Pharmacovigilance) of SP not monitored; • Misuse of LLINs • Low coverage in the administration of 2nd dose SP; • Poor environmental sanitation in most communities.	• Recognition of TBAs by Pregnant Women (PW) • Distribution of LLINs and antimalarial drug during campaigns. •	because of the side effects of quinine • Use of SP for treatment •
• Routine distribution of LLNs to Pregnant women and & U5 • Mass distribution of LLINs had created awareness in availability and accessibility of LLINs; • Availability of Reporting tools and training materials; • LLIN Policy Guidelines available (includes universal access); • Other partners involved	• Misuse of ITNs • Inadequate infrastructure for effective and routine entomological monitoring • Poor infrastructure to support IRS activities;	• Support from Global Fund UNICEF and other partners for routine ITN distribution), • Involvement of local authorities in the IRS implementation;	• Misuse of LLINs (sapo, fishing, “protect” pigs/chickens) • Inadequate participation of NGO partners in supporting training programs on entomology; • Over dependence on external funding; • Dwindling of international funding;

ACSM			
STRENGHTS	**WEAKNESSES**	**OPPORTUNITIES**	**THREATS**
(NGOs, UN etc.); • Distributed 3, 264,927 LLINs nationwide in 2010 • Distributed 3.5 million LLINs nationwide in 2014 • Piloted IRS in 4 districts between 2011 and 2012 with national coverage of 98%.			
• More implementing partners involved in ACSM activities; • Existence of malaria control champions; • Social mobilization committees in all the districts; • Existence of community structures and networks (chrislag, islag, etc.); • Presence of community radio stations in all the districts; • Yearly commemoration of World Malaria Day;	• Limited coordination and collaboration with lining ministries; • Inadequate IEC/BCC materials in the communities; • Health education policy still in a draft; • Inadequate supportive supervision and monitoring; • Inadequate media engagement strategy for tracking and reporting ACSM activities nationwide; • Inadequate monitoring and evaluation of ACSM activities;	• Continuous engagement of community leaders like religious leaders and schools to intensify advocacy and malaria messages; • Exploiting media interest; • Commemoration of international days, eg WMD; • Presence of a network of CHWs who are critical agents in interpersonal communication and behaviour change;	• High reliance on donor funding/perennial donor dependence; • Uncertainties associated with external funding (donor fatigue); • Limited funds to conduct activities; • Progress and performance in achieving annual and strategic targets •

SURVEILLANCE, MONITORING AND EVALUATION			
STRENGHTS	**WEAKNESSES**	**OPPORTUNITIES**	**THREATS**
• Integrated Disease Surveillance and Response (IDSR) 2010 has been adapted and cascading has started in three Districts. • Number of priority disease has increase from 37 to 47 including malaria. • Health Management Information System (HMIS)(DHIS 2) has been successfully rollout to all 13 Districts. It is now web base (on line). • There is a proposal for LMIS to change from channel software to M-supply web based. It is more secured and will be access anywhere; • An integrated supervisory checklist exists and supervision is working. DHMTs submit regular monthly reports to NMCP. • Annual review and planning meetings take place and annual reports are prepared and shared • Availability of integrated	• Vertical reporting by some players in malaria intervention (IPs in some Districts); • Lack of backup system for electronic program data; • Lack of district malaria profile for localized action; • There is research agenda but there is limited local research capacity for use by NMCP; • There are weak oversight role of DHMT over NGO health facility; • Uncoordinated (and irregular) supervision, monitoring and evaluation of planned activities (by all stakeholders) due to low funding • Late disbursement of funds for maintenance of vehicles and motor bikes for supervision at all levels; • Weak collaboration	• MOHS has trained health staff at national, districts and in all health facilities • MOHS and donor supports to program activities • Management of data through HMIS • Feedback to districts/PHUs during DHMT/ In-charges meetings at district level • Tracking district reports at national level for completeness, correctness and consistencies in reporting • Integration of data quality assessment in supportive supervision of health facilities • Introduction of CUG at all levels. • Involvement of community stake holders in health programmes.	• The emergence of new disease (Ebola) • Lack of electronic backup system at District level • Lack of funding to support proposed activities

reporting tools at all levels • All PHUs have phones which are used for reporting data and events.(CUG) • Disease Surveillance Officers, M & E Officer and Malaria Focal Points are in all districts • Availability of the National Malaria Control Programme M & E Plan 2011-2015 (in line with national M & E Plan 2011-2015) • Availability of the data management procedure manual (SOP) • The program has benefited /conducted several surveys and data is available(MIS 2013, DHIS 2013, Post LLINs coverage survey 2011) • Improved collaboration between MoHS/DHMTs/Programs and partners (RBM partnership) through monthly meetings. • Quarterly M&E Subcommittee meeting	between DHMT and hospital management; • High turnover of malaria focal persons at DHMTs • Poor data collection and documentation at hospital level coupled with lack of qualified • M&E personnel at the hospital level • Inadequate data analysis and use at District and PHU levels (including inadequate capacity) • There is stock out of data collection and reporting tools at community and PHUs.		

Annex 5: Detailed Performance Framework

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Impact and Outcome Indicators										
All-cause under-5 mortality rate (Total)	**Numerator:** The number of deaths of children <5 yrs of age x 1000 **Denominator:** Estimated Mid-year children <5yrs population	National	DHS, MICS (2013)	Every 4- 5 years	156			119		
All-cause under-5 mortality rate (Male)	**Numerator:** The number of deaths of children <5 yrs of age (males) x 1000 **Denominator:** Estimated Mid-year children <5yrs population (males)	National	DHS, MICS (2013)	Every 4- 5 years	186			141		

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Impact and Outcome Indicators										
All-cause under-5 mortality rate (Female)	**Numerator:** The number of deaths of children <5 years of age (females) x 1000 **Denominator:** Estimated Mid-year children <5yrs population (females)	National	DHS, MICS (2013)	Every 4- 5 years	164			125		
Inpatient malaria deaths (Total)	**Numerator:** Number of malaria inpatient deaths x 100,000 **Denominator:** Estimated national mid year population	National	HMIS (2014)	Yearly	45	41	38	34	31	27
Inpatient malaria deaths (<5yrs)	**Numerator:** Number of malaria inpatient deaths (<5yrs) x 100,000 **Denominator:** Estimated national mid-year population (<5yrs)	National	HMIS (2014)	Yearly	NA	64	56	52	48	44

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Inpatient malaria deaths (<5yrs)-Male	**Numerator:** Number of malaria inpatient deaths (<5yrs)- Male x 100,000 **Denominator:** Estimated national mid year population (<5yrs)- Male	National	HMIS (2014)	Yearly	NA	64	56	52	48	44
Inpatient malaria deaths (<5yrs)-Female	**Numerator:** Number of malaria inpatient deaths (<5yrs)- Female x 100,000 **Denominator:** Estimated national mid year population (<5yrs)- Female	National	HMIS (2014)	Yearly	NA	64	56	52	48	44
Inpatient malaria deaths (>5yrs)	**Numerator:** Number of malaria inpatient deaths (>5yrs) x 100,000 **Denominator:** Estimated national mid year population (>5yrs)	National	HMIS (2014)	Yearly	NA	50	46	43	39	36

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Inpatient malaria deaths (>5yrs)- Male	**Numerator:** Number of malaria inpatient deaths (>5yrs)- Male x 100,000 **Denominator:** Estimated national mid year population (>5yrs)- Male	National	HMIS (2014)	Yearly	NA	50	46	43	39	36
Inpatient malaria deaths (>5yrs)- Female	**Numerator:** Number of malaria inpatient deaths (>5yrs)- Female x 100,000 **Denominator:** Estimated national mid year population (>5yrs)- Female	National	HMIS (2014)	Yearly	NA	50	46	43	39	36
Inpatient malaria deaths (Male)	**Numerator:** Number of malaria inpatient deaths (males) x 100,000 **Denominator:** Estimated national mid year population (males)	National	HMIS (2014)	Yearly	NA	41	38	34	31	27

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Inpatient malaria deaths (Female)	**Numerator:** Number of malaria inpatient deaths (females) x 100,000 **Denominator:** Estimated national mid year population (females)	National	HMIS (2014)	Yearly	NA	41	38	34	31	27
Malaria incidence (Confirmed & Probable Malaria Cases) All Ages	**Numerator:** Number of confirmed (microscopy and/or RDT) and probable malaria cases x 1000 **Denominator:** Estimated National Mid-year Population	National	HMIS (2014)	Yearly	346	318	291	263	235	208
Malaria incidence (Confirmed & Probable Malaria Cases)(<5yrs)	**Numerator:** Number of confirmed (microscopy and/or RDT) and probable malaria cases (<5yrs) x 1000	National	HMIS (2014)	Yearly	185	171	157	144	133	122

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
	Denominator: Estimated National Mid-year Population (<5yrs)									
Malaria incidence (Confirmed & Probable Malaria Cases)(<5yrs)- Male	**Numerator:** Number of confirmed (microscopy and/or RDT) and probable malaria cases (<5yrs)- Male x 1000 **Denominator:** Estimated National Mid-year Population (<5yrs)	National	HMIS (2014)	Yearly	NA	171	157	144	133	122
Malaria incidence (Confirmed & Probable Malaria Cases)(<5yrs)- Female	**Numerator:** Number of confirmed (microscopy and/or RDT) and probable malaria cases (<5yrs)- Female x 1000 **Denominator:** Estimated National Mid-year Population (<5yrs)	National	HMIS (2014)	Yearly	NA	171	157	144	133	122

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Malaria incidence (Confirmed & Probable Malaria Cases)(>5yrs)	**Numerator:** The number of confirmed (microscopy and/or RDT) and probable malaria cases (>5yrs) x 1000 **Denominator:** Estimated National Mid-year Population (>5yrs)	National	HMIS (2014)	Yearly	175	160	148	136	125	115
Malaria incidence (Confirmed & Probable Malaria Cases)(>5yrs)- Male	**Numerator:** The number of confirmed (microscopy and/or RDT) and probable malaria cases (>5yrs)- Male x 1000 **Denominator:** Estimated National Mid-year Population (>5yrs)- Male	National	HMIS (2014)	Yearly	NA	160	148	136	125	115

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Malaria incidence (Confirmed & Probable Malaria Cases)(>5yrs)- Female	**Numerator:** The number of confirmed (microscopy and/or RDT) and probable malaria cases (>5yrs)- Female x 1000 **Denominator:** Estimated National Mid-year Population (>5yrs)- Female	National	HMIS (2014)	Yearly	NA	160	148	136	125	115
Malaria incidence (Confirmed & Probable Malaria Cases)- Male	**Numerator:** The number of confirmed (microscopy and/or RDT) and probable malaria cases (male) x 1000 **Denominator:** Estimated National Mid-year Population (male)	National	HMIS (2014)	Yearly	NA	180	175	161	148	137

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Malaria incidence (Confirmed & Probable Malaria Cases)- Females	**Numerator:** The number of confirmed (microscopy and/or RDT) and probable malaria cases (female) x 1000 **Denominator:** Estimated National Mid-year Population (female)	National	HMIS (2014)	Yearly	NA	180	175	161	148	137
Annual Parasite Index	**Numerator:** The number of positive tests X 1000 **Denominator:** Estimated National Mid-year population	National	HMIS (2014)	Yearly	270	248	227	205	184	162
Annual Parasite Index (<5yrs)	**Numerator:** The number of positive tests in children <5yrs X 1000 **Denominator:** Estimated National Mid-year population children <5yrs	National	HMIS (2014)	Yearly	828	761	701	645	593	546

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Annual Parasite Index (<5yrs)- Male	**Numerator:** The number of positive tests in children (<5yrs)- Male X 1000 **Denominator:** Estimated National Mid-year population children (<5yrs)- Male	National	HMIS (2014)	Yearly	NA	761	701	645	593	546
Annual Parasite Index (<5yrs)- Female	**Numerator:** The number of positive tests in children (<5yrs)- Female X 1000 **Denominator:** Estimated National Mid-year population children (<5yrs)- Female	National	HMIS (2014)	Yearly	NA	761	701	645	593	546
Annual Parasite Index (>5yrs)	**Numerator:** The number of positive tests in children >5yrs X1000 **Denominator:** Estimated National Mid-year population children >5yrs	National	HMIS (2014)	Yearly	192	176	162	149	137	126

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Annual Parasite Index (>5yrs)	**Numerator:** The number of positive tests in children >5yrs X1000 **Denominator:** Estimated National Mid-year population children >5yrs	National	HMIS (2014)	Yearly	NA	176	162	149	137	126
Annual Parasite Index (>5yrs)	**Numerator:** The number of positive tests in children >5yrs X1000 **Denominator:** Estimated National Mid-year population children >5yrs	National	HMIS (2014)	Yearly	NA	176	162	149	137	126
Annual Parasite Index (Males)	**Numerator:** The number of positive tests in Females X 1000 **Denominator:** Estimated National Mid-year female population	National	HMIS (2014)	Yearly	NA	510	505	465	428	394

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Annual Parasite Index (Females)	**Numerator:** The number of positive tests X 1000 **Denominator:** Estimated National Mid-year population.	National	HMIS (2014)	Yearly	NA	510	505	465	428	394
Slide Positivity Rate	**Numerator:** Number of positive tests x 100 **Denominator:** Number of tests examined.	National	HMIS (2014)	Yearly	56.2%	52.0%	48.0%	44.0%	40.3%	37.0%
Slide Positivity Rate (<5yrs)	**Numerator:** Number of positive tests <5yrs x 100 **Denominator:** Number of tests examined <5yrs	National	HMIS (2014)	Yearly	63.4%	59.0%	54.0%	50.0%	46.0%	42.0%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Slide Positivity Rate (>5yrs)	**Numerator:** Number of positive tests >5yrs x 100 **Denominator:** Number of tests examined >5yrs.	National	HMIS (2014)	Yearly	52.8%	48.0%	44.0%	41.0 %	38.0 %	35.0%
Slide Positivity Rate (Males)	**Numerator:** Number of positive male tests x 100 **Denominator:** Number of male tests examined.	National	HMIS (2014)	Yearly	NA	58%	53%	49%	45%	42%
Slide Positivity Rate (Females)	**Numerator:** Number of positive female tests x 100 **Denominator:** Number of female tests examined.	National	HMIS (2014)	Yearly	NA	58%	53%	49%	45%	42%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2010
Parasite prevalence: Proportion (Percentage) of children aged 6-59 months (<5 years of age) with malaria infection	**Numerator:** Number of confirmed parasite infections in sampled children 6-59 months (<5 years of age) **Denominator:** Number of sampled children 6-59 months (<5 years) screened for parasite infections	National	MIS (2013)	Every 2 years	43%	40%		33%		26%
Proportion of households with at least 1 ITN/LLIN per two people	**Numerator:** Number of households having at least one LLIN per two people x 100 **Denominator:** Total number of households sampled	National and District	MIS (2013)	Every 2 years	17%	80%		90%		100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportion of households with at least 1 ITN/LLIN	**Numerator:** Number of households surveyed with at least one ITN **Denominator:** Total number of households surveyed	National and District	MIS (2013)	Every 2 years	62%	90%		95%		100%
Proportion of population that slept under ITN/LLIN the previous night	**Numerator:** Number of individuals who slept under an ITN the previous night **Denominator:** Total number of	National and District	MIS (2013)	Every 2 years	39%	80%		90%		100%
	individuals who spent the previous night in surveyed households									

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportion of children under-fives who slept under LLINs the previous night	**Numerator:** Number of children <5yrs who slept under an ITN the previous night **Denominator:** Total number of children <5yrs who spent the previous night in surveyed households	National and District	MIS (2013)	Every 2 years	45%	75%		85%		100%
The proportion of pregnant women who slept under ITN/LLIN the previous night	**Numerator:** Number of pregnant women who slept under an ITN the previous night **Denominator:** Total number of pregnant women who spent the previous night in surveyed households	National and District	MIS (2013)	Every 2 years	47%	75%		85%		100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
The proportion of population using ITN/LLIN among those with access to ITN/LLIN	**Numerator:** The number of population using ITN/LLIN among those with access to ITN/LLIN **Denominator:** The number of the population having access to an ITN/LLIN	National and District	MIS (2013)	Every 2 years	51%	70%		90%		100%
Proportion of children under five with fever for whom the caretaker sought prompt care	**Numerator:** Number of children under five with fever for whom the caretaker sought prompt care **Denominator:** The number of caretakers with children under five with fever	National	MIS (2013)	Every 2 years	63%	70%		80%		100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportions of quarterly malaria reports produced and disseminated to 13 districts as part of a disease decision support network.	**Numerator:** Number of quarterly report produced and disseminated to 13 districts **Denominator**: Target number of district reports	National	Report (2014)	Annually	100%	100%	100%	100%	100%	100%
Proportion of annual and mid-term review recommendations disseminated to partners and stake holders.	**Numerator:** Number of annual and mid-term review recommendations disseminated to partners and stake holders **Denominator:** Targeted annual and mid-term review recommendations.	National	Report (2013)	Annually	50%	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Case Management										
OBJECTIVE 1a : All suspected malaria cases have access to confirmatory diagnosis										
Proportion of suspected malaria cases tested in children under five years according to national guidelines in the public sector.	**Numerator:** Number of suspected malaria cases tested in children under five years according to national guidelines in the public sector. **Denominator:** Total number of suspected malaria cases in children under five years tested in the public sector	National and District	HMIS	Annually	79.4% (HMIS, 2014)	100%	100%	100%	100%	100%
Proportion of suspected malaria cases tested in people above five years according to national guidelines in the public sector.	**Numerator:** Number of suspected malaria cases tested in people above fives years according to national guidelines in the public sector.	National and District	HMIS	Annually	44.6% (HMIS, 2014)	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
	Denominator: Total number of suspected malaria cases in people above five years in the public sector									
Proportion of suspected malaria cases tested in children under five years according to national guidelines in the private sector.	**Numerator:** Number of suspected malaria cases tested in children under five years according to national guidelines in the private sector. **Denominator:** Total number of suspected malaria cases in children under five years in the private sector	National and District	HMIS	Annually	36.8% (MHIS, 2014)	50%	60%	70%	80%	90%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportion of suspected malaria cases tested in people five years and above according to national guidelines in the private sector.	**Numerator:** Number of suspected malaria cases tested in people five years and above according to national guidelines in the private sector. **Denominator:** Total number of suspected malaria cases in people five years and above in the private sector	National and District	HMIS	Annually	98.7% (MHIS, 2014)	100%	100%	100%	100%	100%
Proportion of suspected malaria cases tested in children under five years according to national guidelines in the community.	**Numerator:** Number of suspected malaria cases tested in children under years according to national guidelines in the community.	National and District	HMIS	Annually	92% (HMIS, 2014	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
	Denominator: Total number of suspected malaria cases in children under five years tested in the community									
Proportion of suspected malaria cases tested in people above five years according to national guidelines in the community.	**Numerator:** Number of suspected malaria cases tested in people above fives years according to national guidelines in the community. **Denominator:** Total number of suspected malaria cases in people above five years in the community sector	National and District	HMIS	Annually	91.6% (HMIS, 2014)	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportion of health facilities/communities with no stock outs of diagnostic commodities within the reporting period.	**Numerator:** Number of health facilities/communities with no stock outs of diagnostic commodities. **Denominator:** Total number of health facilities / communities within the reporting period.	National and District	HMIS	Annually	95% (HMIS 2014)	100%	100%	100%	100%	100%
Proportion of health staff trained on malaria diagnosis	**Numerator:** Number of health staff trained on malaria diagnosis **Denominator:** Total number of health staff	District	Training report	Annually	38.5% (NMCP Training Records, 2013)	75%	80%	85%	90%	95%
Proportion of CHWs trained on malaria diagnosis	**Numerator:** Number of CHWs trained on malaria diagnosis **Denominator:** Total number of Community Health Workers	District	Training report	Annually	68% (4,627/6,770)	75%	80%	85%	90%	95%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Objective 1b: All malaria cases received effective treatment										
Proportion of uncomplicated malaria cases in children under five years treated according to national guidelines in the public sector.	**Numerator:** Number of uncomplicated malaria cases in children under five years treated according to national guidelines in the public sector. **Denominator:** Total number of uncomplicated malaria cases in children under five years treated in the public sector	National and District	HMIS	Annually	99.6% (HMIS, 2014)	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportion of uncomplicated malaria cases in people five years and above treated according to national guidelines in the public sector.	**Numerator:** Number of uncomplicated malaria cases in people five years and above treated according to national guidelines in the public sector. **Denominator:** Total number of uncomplicated malaria cases in people five years and above treated in the public sector	National and District	HMIS	Annually	88% (HMIS, 2014)	100%	100%	100%	100%	100%
Proportion of uncomplicated malaria cases in children under five years treated according to national guidelines in the private sector.	**Numerator:** Number of uncomplicated malaria cases in children under five years treated according to national guidelines in the public sector.	National and District	HMIS	Annually	82% (HMIS, 2014)	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
	Denominator: Total number of uncomplicated malaria cases in people five years treated in the public sector									
Proportion of uncomplicated malaria cases in people above five years treated according to national guidelines in the private sector.	**Numerator:** Number of uncomplicated malaria cases in people above five years treated according to national guidelines in the private sector. **Denominator:** Total number of uncomplicated malaria cases in people above five years treated in the private sector	National and District	HMIS	Annually	68% (HMIS, 2014)	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportion of uncomplicated malaria cases in children under five years treated according to national guidelines in the community.	**Numerator:** Number of uncomplicated malaria cases in children under five years treated according to national guidelines in the community. **Denominator:** Total number of uncomplicated malaria cases in children under five years treated in the community.	National and District	HMIS	Annually	68.8% (HMIS, 2014)	100%	100%	100%	100%	100%
Proportion of uncomplicated malaria cases in people above five years treated according to national guidelines in the community	**Numerator:** Number of uncomplicated malaria cases in people above five years treated according to national guidelines in the community.	National and District	HMIS	Annually	62.3% (HMIS, 2014)	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
	Denominator: Total number of uncomplicated malaria cases in people above five years treated in the community									
Proportion of health facilities with no stock outs of ACTs at any time during reporting period.	**Numerator**: Number of health facilities with no reported stock outs of ACTs at any time during the reporting period **Denominator**: Total number of health facilities reported.	National and District	HMIS	Annually	95% (HMIS, 2014)	100%	100%	100%	100%	100%
Proportion of health communities with no stock outs of ACTs at any time during reporting period.	**Numerator**: Number of health communities with no reported stock outs of ACTs at any time during the reporting period **Denominator**: Total number of health communities reported.	National and District	HMIS	Annually	TBD	100%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Objective 2a: Provide access to 100% of the population at risk with preventive measures by 2017										
Number of LLINs distributed to the population through mass campaigns	**Numerator:** Total number of targeted population for mass distribution who receive LLIN. **Denominator:** Total number of population targeted for distribution.	National and District	Mass Campaign Administrative report (2014)	Every 3 years	98.6% (2014)		100%			100%
Number of LLINs distributed to pregnant women through ANC and children under one year through EPI (Routine distribution)	**Numerator:** Total number of pregnant women and children under one year targeted for routine distribution who received ITN/LLIN **Denominator:** Total number of pregnant women and children under one targeted for ITN/LLIN distribution.	National and District	HMIS	Annually	87.4% (HMIS, 2014)	90%	100%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Objective 2b: To Protect at least 80% of Pregnant women and children under one year with IPT 3 BY 2020										
Percentage of pregnant women who received at least two doses of IPTp2 for malaria during their last pregnancy	**Numerator:** Number of pregnant women who receive at least two doses of SP for IPTp2. **Denominator:** Total number of pregnant women surveyed	National	MIS	Every 2 years	61.7% (MIS, 2013)	70%		80%		90%
Percentage of pregnant women who received at least three doses of IPTp3 for malaria during their last pregnancy	**Numerator:** Number of pregnant women who receive at least three doses of SP for IPTp3. **Denominator:** Total number of pregnant women surveyed.	National	MIS	Every 2 years	NA	Establish baseline		30%		50%
Percentage of children under one year who receive at least three doses of IPTi3 through EPI services	**Numerator:** Number of children under one year who receive at least three doses of SP for IPTi3.	National	HMIS	Annually	NA	Establish baseline	56%	69%	75%	80%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
	Denominator: Total number of children under one year targeted for IPTi 3 dose.									
Objective 3: To provide knowledge to the population such that at least 80% practice malaria prevention and treatment measures by 2018										
Proportion of women of child bearing age (15-49 years) that report mosquito bite as the cause of malaria	**Numerator:** Number of women of child bearing age (15-49 years) that report mosquito bite as the cause of malaria **Denominator:** Total number of women (15-49 years) surveyed	National and District	MIS	Every 2 years	90.8% (MIS 2013)	100%		100%		100%
Proportion of women of child bearing age (15-49 years) that report fever as a symptom of malaria	**Numerator:** Number of women of child bearing age (15-49 years) that report fever as a symptom of malaria **Denominator:** Total number of women (15-49 years) surveyed	National and District	MIS	Every 2 years	64% (MIS, 2013)	80%		90%		100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Proportion of women of child bearing age (15-49 years) who know that vomiting everything is a sign of severe illness (malaria).	**Numerator:** Number of women of child bearing age (15-49 years) who know that vomiting everything is a sign of severe illness (malaria) **Denominator:** Total number of women (15-49 years) surveyed	National and District	MIS	Every 2 years	37.1% (MIS, 2013)	60%		80%		100%
Proportion of women of child bearing age (15-49 years) who have the correct knowledge of preventive measures for malaria	**Numerator:** Number of women of child bearing age (15-49 years) who have the correct knowledge of preventive measures for malaria **Denominator:** Total number of women (15-49 years) surveyed	National and District	MIS	Every 2 years	45.1% (MIS, 2013)	60%		80%		100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Number of functional community health clubs mobilized to deliver BCC outreach activities	Functionality is measured by regular monthly meetings where 80% (8 out of 10) of members attends. There should be minutes of the meetings with list of participants and bullets of issues covered.	National at community level	SR monthly Report sheet	Monthly	1111	100%	100%	100%	100%	100%
Number of functional school health clubs mobilized to deliver BCC outreach activities.		National at community level	SR monthly Report sheet	Monthly	390	100%	100%	100%	100%	100%

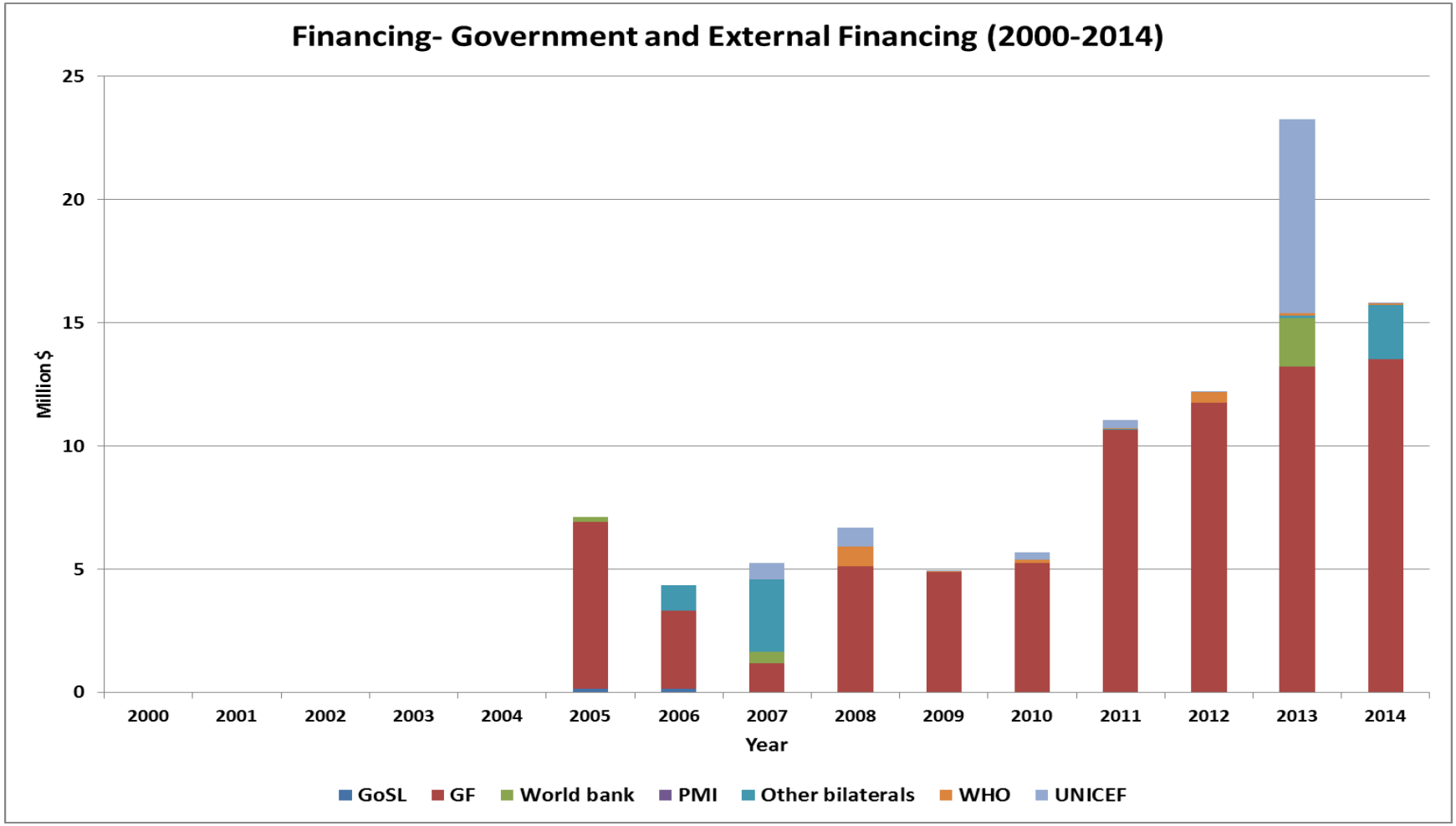
Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Number of people in the community reached through sensitization activities (CHCs)		National at community level	SR monthly Report sheet	Monthly	N/A	80%	90%	100%	100%	100%
Number of in-school youth reached through sensitization activities (SHCs)		National at community level	SR monthly Report sheet	Monthly	N/A	80%	90%	100%	100%	100%

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Objective 4: By 2020, at least 95% of Health facilities report routinely on malaria programme performance										
Percentage of PHU and hospital staff supervised by NMCP using supervisory checklist from National to district level	**Numerator:** Number of PHU and hospital staff supervised by NMCP using supervisory checklist from National to district level **Denominator:** **T**argeted number of PHU and hospital staff in the districts.	National	Report	Annually	42.2% 2014 HMIS	80%	85%	90%	95%	100%
Percentage of health workers and community health workers supervised by DHMT and Partners.	**Numerator:** Number of health workers and community health workers supervised by DHMT and Partners **Denominator:** Number of targeted health workers and community health workers.	District	Report	Annually	65.4% 2014 HMIS	80%	85%	90%	95%	100%

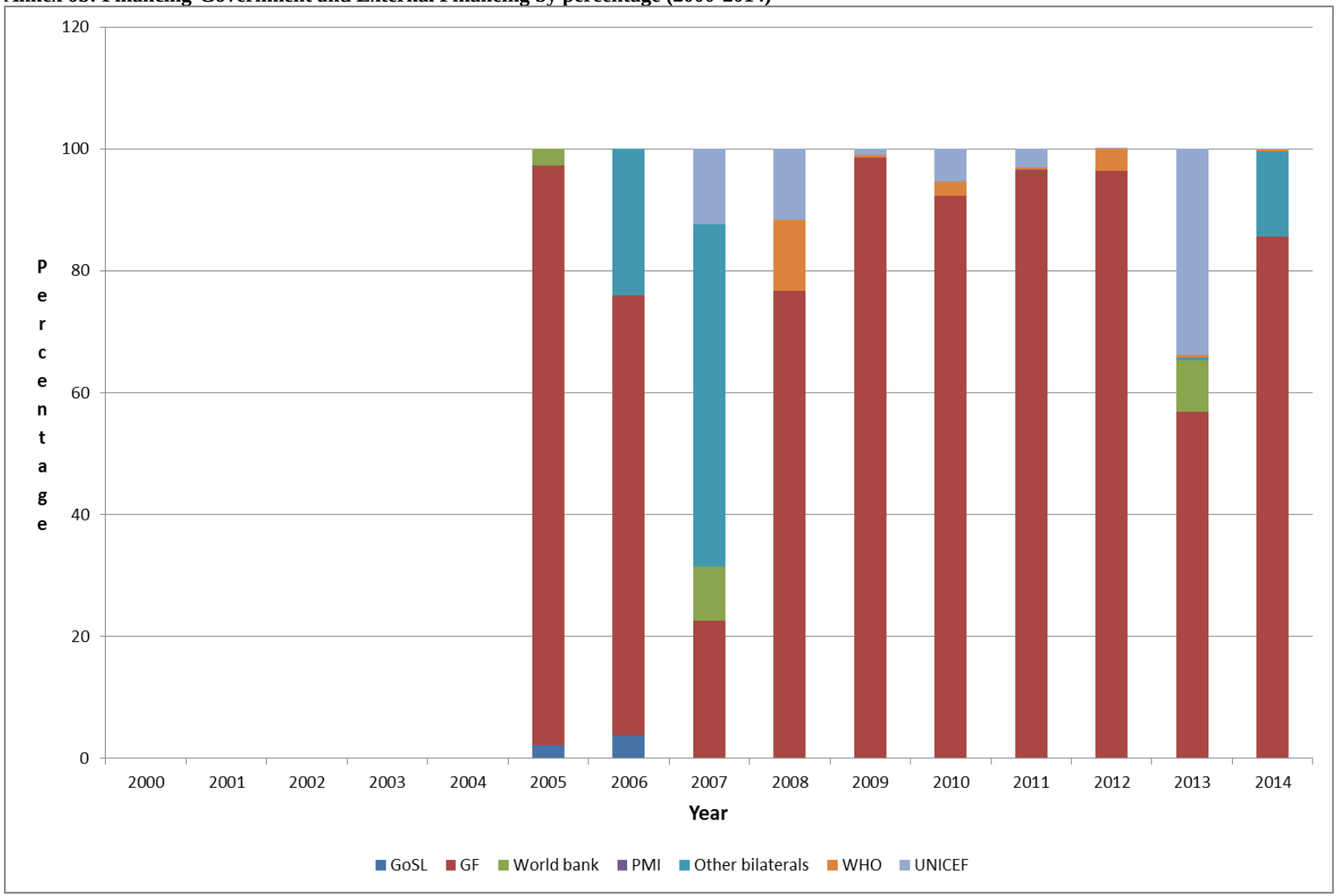
Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Percentage of community health workers supervised by PHU staff and Partners	**Numerator:** Number of community health workers supervised by PHU staff and Partners **Denominator:** Number of targeted community health workers.	District	Report	Annually	NA	80%	85%	90%	95%	100%
Proportion of districts conducting data quality audits and verification on HMIS for completeness on malaria indicators	**Numerator:** Number of districts conducting data quality audits and verification on HMIS for completeness on malaria indicators **Denominator:** Total targeted districts	District	Report	Annually	NA	100%	100%	100%	100%	100%
Objective 5: By 2020, maintain and strengthen capacity for programme management, coordination and partnership to achieve malaria programme performance at all levels.										
Number of functional Technical Working Groups holding quarterly meetings	Number of Meetings held at National level on Malaria prevention and control related activities.	National and District	Report	Annually	8	28	28	28	28	28

Indicator	Operational Definition	Level of Implementation	Data Source	Frequency of Collection	Baseline	Target				
						2016	2017	2018	2019	2020
Number of RBM partnership coordination meetings held	RBM meetings held at National level on Malaria prevention and control related activities.	National and District	Report	Monthly	12 (2014 NMCP Report)	12	12	12	12	12

Annex 6a: Trends in funding from 2000-2014



Annex 6b: Financing-Government and External Financing by percentage (2000-2014)



Annex 7: Financing-Government and External (2000-2014)

Donor Partners	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
GoSL *						151,492	166,641						0	26,898	3,074
GF						6,784,566	3,155,047	1,187,379	5,126,487	4,884,763	5,241,344	10,669,010	11,763,088	13,216,219	13,525,631
World bank						191,833		460,620	5,141				0	1,952,807	0
PMI													0	0	0
Other bilateral							1,047,500	2,950,000				10,478	0	112,855	2,200,067
WHO									778,590	26,413	137,255	43,261	430,000	84,000	50,000
UNICEF								650,000	778,590	46,086	302,880	329,667	2,812	7,874,921	17,912
Totals	**0**	**0**	**0**	**0**	**0**	**7,127,891**	**4,369,188**	**5,247,999**	**6,688,808**	**4,957,262**	**5,681,479**	**11,052,416**	**12,195,900**	**23,267,700**	**15,796,683**

*Domestic funding and especially from the Government of Sierra Leone is challenging to track. The methodology used for current and anticipated funding is the Government of Sierra Leone Budgetary Process based on the Government Budgeting and Accountability Act of 2004. Spending is incurred at all level of the government from the central to the district (DHMTs) through the Districts Local Councils and the peripheral level (PHUs). The composition of the reported government spending for malaria includes the following: Salaries and Wages; Fuel for routine movements and supervision; Stationery and Office Equipment; Local Travel Expenses; Drugs and medical supplies for the treatment of uncomplicated and severe malaria; GoSL also supports significant number of pre-service and in-service training in the health sector (workshops, seminar, short courses and scholarships) among others.