The Global Fund
To Fight AIDS, Tuberculosis and Malaria

STANDARD CONCEPT NOTE

Investing for impact against HIV, tuberculosis or malaria

A concept note outlines the reasons for Global Fund investment. Each concept note should describe a strategy, supported by technical data that shows why this approach will be effective. Guided by a national health strategy and a national disease strategic plan, it prioritizes a country's needs within a broader context. Further, it describes how implementation of the resulting grants can maximize the impact of the investment, by reaching the greatest number of people and by achieving the greatest possible effect on their health.

A concept note is divided into the following sections:

Section 1: A description of the country's epidemiological situation, including health systems and barriers to access, as well as the national response.

Section 2: Information on the national funding landscape and sustainability.

Section 3: A funding request to the Global Fund, including a programmatic gap analysis, rationale and description, and modular template.

Section 4: Implementation arrangements and risk assessment.

IMPORTANT NOTE: **Applicants should refer to theStandard Concept Note Instructions to complete this template.**

SECTION 1: COUNTRY CONTEXT

This section requests information on the country context, including the disease epidemiology, the health systems and community systems setting, and the human rights situation. This description is critical for justifying the choice of appropriate interventions.

1.1 Country Disease, Health and Community Systems Context

With reference to the latest available epidemiological information, in addition to the portfolio analysis provided by the Global Fund, highlight:

a. The current and evolving epidemiology of the disease(s)and any significant geographic variations in disease risk or prevalence.

b. Key populations that may have disproportionately low access to prevention and treatment services (and for HIV and TB, the availability of care and support services), and the contributing factors to this inequality.

c. Key human rights barriers and gender inequalities that may impede access to health services.

d. The health systems and community systems context in the country, including any constraints.

a) The current and evolving epidemiology of the disease

The current and evolving epidemiology of malaria in Rwanda is comprehensively described in the Rwanda Malaria Control Strategic Plan (MSP) July 2013 – June 2018 (see Annex 1). An overview is presented here:

- Malaria species – *Plasmodium falciparum* (*P.f*) is the most common species, representing 97-99% of the parasite population
- Malaria vectors – *Anopheles gambiaes.s* is the dominant species, making up 97% of all malaria vectors collected in monthly entomological monitoring
- Seasonal malaria trends –Malaria transmission occurs year-round with two peaks (May-June, November-December) in the endemic zones following distinct rainy seasons. However, despite this trend, malaria transmission remains unstable and correlated with variable rainfall
- Geographic distribution –The whole population of Rwanda is at risk. Rwanda has three distinctive ecological zones based on altitude, climate, level of transmission, and disease vector prevalence (see Figure 1 and Table 1 below).

Malaria geographical stratification

Rwanda is a small, land-locked country situated in East Africa south of the equator. It is bordered by Uganda to the north, Tanzania to the east, the Democratic Republic of the Congo to the west, and Burundi to the south. Administratively, Rwanda is divided into four provinces and Kigali City, which are further divided into 30 districts. The districts are divided into 417 sectors and 2,148 cells that are further divided into 14,837 'umudugudus' (villages of 50-100 households). The population of Rwanda is estimated to be 10,515,973 people as of August 2012 of which 51.8% are female (Census-NISR)[1]. The Rwandan population is predominantly rural: 83.5% of the resident population lives in rural areas versus 16.5% in urban areas. Children 0-14 years account for 42.9% of the population, young adults 15-64 years for 54.7% and adults over 65 years for 2.4%. For further demographic and socio-economic details on Rwanda, see the MSP (Annex 1).

The recentmalaria stratification done using epidemiological and modeling methodsshows that, in terms of epidemiological stratification, malaria is holo-endemic in the plains (to the east and south of the country) while the high plateaus and hills (in the west and center of the country) are epidemic prone creating three distinctive ecological zones based on altitude, climate, level of transmission, and disease vector prevalence. Nineteen (63%) of the country's 30 districts are classified as epidemic-prone and the remaining 11 as endemic.

Using the transmission data shown in the map shown above and the parasite prevalence rate, the malaria

annual incidence or the annual parasite incidence, the country has been stratified into three zones: low transmission districts with less than 1% parasitemia prevalence; lower moderate transmission districts with between 1% and 5% parasitemia prevalence; and upper moderate transmission districts with over 5% parasite prevalence.

Across the country, there is a need to sustain the gains made to date and work to decrease malaria burden using an integrated set of malaria control interventions. However, prevalence in some districts in Zones 1 and 2 is now at a level that make pre-elimination a possibility (i.e. SPR <5%).

Rwanda aims to update malaria stratification data on a routine basis in order to track the impact of the agreed set of interventions in each district and strategize with regard to expanding the pre-elimination map.

Figure 1: Rwanda malaria epidemiological stratification

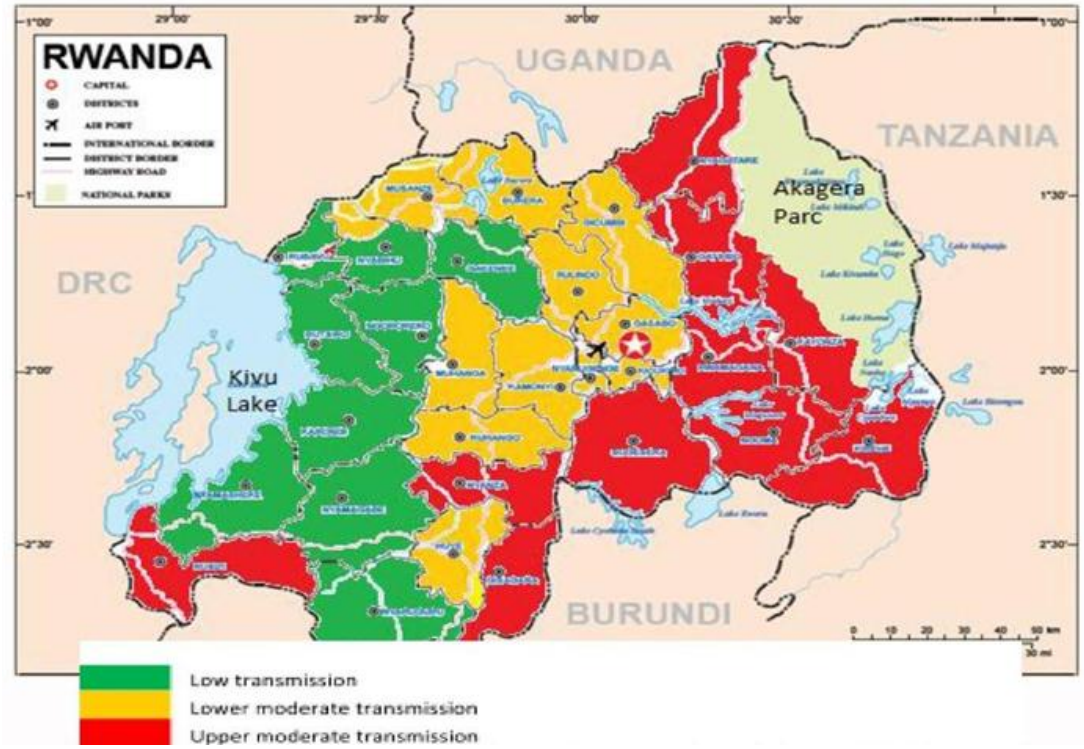


Table 1: Malaria stratification by three zones

Strata	Districts	Parasite prevalence	Malaria Annual incidence or API	Altitude (m)	# of districts	Population size
Zone 1: Low transmission Western Province (minus Rusizi) + Gakenke and Nyamagabe	Nyamasheke, Karongi, Rutsiro, Ngororero, Nyabihu, Rubavu, Nyamagabe, Nyaruguru, Gakenke	< 1%	Zone 1a: < 1 ‰ Zone 1b: 1-5 ‰	1460–3000	9	3,210,461
Zone 2: Lower moderate transmission: North, Kigali, upper South and Huye	Musanze, Burera, Rulindo, Gicumbi, Kamonyi, Muhanga, Ruhango, Kicukiro, Gasabo, Nyarugenge, Huye,	1-5 %	Zone 2a: 1-5 ‰ Zone 2b: 5 - 10 ‰	1500–2000	11	2,902,556
Zone 3: Upper Moderate transmission: East and lower South and lower West (Rusizi)	Nyagatare, Gatsibo, Kayonza, Kirehe, Rwamagana, Bugesera, Nyanza, Gisagara, Rusizi, Ngoma,	> 5%	≥10‰ (except Ngoma district 5 - 10 ‰)	1000–1500	10	2,936,596

b) Key populations

All Rwandans are at risk for malaria. However, as the malaria stratification map indicates, risk is not equally distributed across Rwanda with those in higher burden districts being at higher risk. Eleven (37%) out of 30 districts currently and historically account for >80% of the malaria morbidity and mortality.

In addition to climate and altitude, other factors that influence the malaria burden in the country include high human concentration (e.g. boarding schools in proximity to marshlands); population movement (especially from areas of low to high transmission); irrigation schemes (especially in the eastern and southern parts of the country); and cross-border movement of people (especially in the eastern and southeastern

parts of the country) where Rwanda shares borders with high-burden, endemic countries (each of the nine highest-burden districts in Rwanda shares border with Burundi, Tanzania or Uganda.

Pregnant women and children under 5 years are biologically vulnerable.

c) Key human rights barriers and gender inequalities

Rwanda stresses equality and universal access of health services and these principles are included in both the Third Health Sector Strategic Plan (HSSP III)(Annexes 2 and 3) and the MSP 2013-2018. The country has increased access to health services for all dramatically through:

- Community Based Health Insurance (CBHI). The 2010 Rwandan Demographic and Household Survey (DHS)2010 showed that 78% of households have at least one family member with health insurance and that, among those insured, 98% have CHBI (mutuelles). The Government of Rwanda (GOR) provides CBHI cover to the poorest of the poor (Annex 4)
- Investment in the extensive network of 45,000 community health workers (CHWs)and Agent de Sante Maternelle (ASMs) with two CHWs and one ASM per village; Annex 5). This network plays a pivotal role in increasing last-mile access to basic health services and functioning referral systems.

Data from periodic household surveys such as the DHS and the Rwandan Malaria Indicator Survey (MIS)(Annex 6) can attest to the reality of Rwanda's equality in access to health services including malaria interventions. Access to health services, ownership and use of long-lasting insecticidal nets (LLINs) and indoor residual spraying (IRS), and diagnosis, and prompt treatment with artemisinin-based combination therapy(ACTs), show no significant differences across socio-economic status or rural/urban context.

Rwanda respects gender equality throughout its systems and actually leads sub-Saharan Africa with women in government positions. Household surveys (DHS, MIS) show no significant differences between genders related to access to health services including malaria interventions.

d) The health systems and community systems context

The Rwanda Health System has five tiers(Figure 2). The roles and responsibilities of each layer of the health system are described in the MSP (Annex 1).

The Ministry of Health (MOH) supports, coordinates and regulates all interventions whose primary objective is to improve the health of the population. The MOH consists of two main health entities: the core MOH and the Rwanda Biomedical Centre (RBC). The RBC coordinates health services provided through two main departments, Biomedical Services and the Institute of HIV/AIDS, Diseases Prevention and Control which includes the National Malaria Control Program (NMCP).

The 30 districts receive funds from the GOR through direct transfers from the Ministry of Finance and Economic Planning (MINECOFIN),according to a Performance-Based Financing (PBF) contract that is negotiated on an annual basis ,and some benefit from donor funding. Each district has at least one district hospital and an average of one health centre per 20,000 population members. Public health facilities represent 55% of the total number of health facilities in Rwanda; an additional 22% are run by faith-based organizations, 20% by private organizations, 2% by communities and 1% by parastatal organizations. Currently, the private sector is poorly organized and controlled and its relationships with the public sector are still poorly defined.

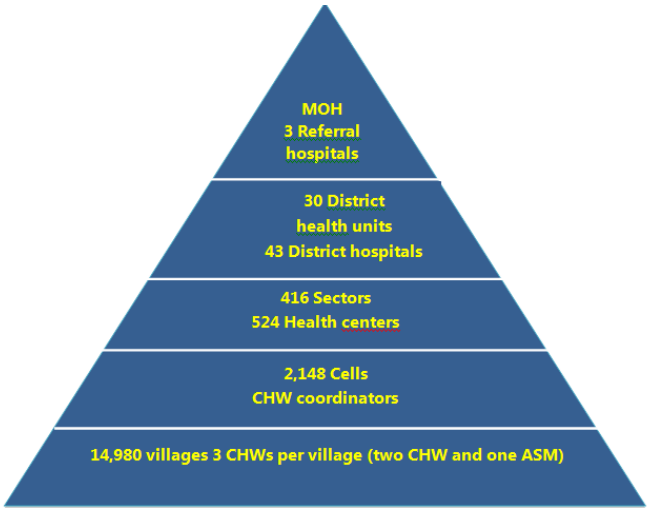
The referral system is anchored by the provision of an average of four ambulances per district as well as the CHWs having access to cell phones.

Access to basic health services has been greatly expanded by the establishment by the GOR of a strong community health system. The system avails three community health workers per village; two CHWS and one ASM. In total, there are 30,000 CHWs and 15,000 ASMs across the country (Annexes 1 and 5).

CHWs and ASMs: create awareness of available primary health care services; mobilize community members to join the health insurance scheme(s); distribute condoms; assist in mass LLIN distribution campaigns and visit catchment households quarterly for LLIN hang-up / keep-up; provide basic emergency health care to children before taking them to health centers; sensitize pregnant women of the need for antenatal care (ANC) and facility-based deliveries, recognize the signs and symptoms of malaria, and sleep under an LLIN; create awareness of hygiene best practices; and register and report deaths. The CHWs are indispensable in scaling up iCCM.

Each CHW is valued and appointed by their community and is equipped with a cell phone. The MOH has worked with local mobile companies to ensure that calls to health facilities and SMS alerts are free.

Figure 2: Structure of the Rwandan health system



Financial accessibility benefits from three recent and interrelated policies: the Health Financing Policy (HFP) (Annex 7), the Health Insurance Policy (HIP), and the CBHI Policy (Annex 5).

The scale up of interventions and impact on malaria have been made possible by effective management of the health system as exemplified by the integration and decentralization of malaria control at all levels, the introduction of performance-based pay for health workers who deliver key high quality interventions and meet targets, and community involvement and participation.

The country has managed to almost double the number of doctors and nurses over the last three years to achieve a doctor/population ratio of 1⁄16,001 and nurse/population ratio of 1⁄1,291. However, it is acknowledged that there is still work to be done to get sufficient health staff, to strengthen their human and technical skills, and to equitably (re)distribute the health providers.

For malaria, key human resource areas that need to be strengthened include:

- Build capacity for entomological monitoring and IRS planning, implementation and monitoring and evaluation (M&E)
- Build central and decentralized capacity for surveillance and M&E
- Build a foundation for “enhanced surveillance” in the context of pre-elimination in low malaria burden districts with individual case reporting, investigation and response.

The national procurement system is supervised by the Rwanda Public Procurement Authority (RPPA) which is an agency affiliated to the MINECOFIN. It oversees the implementation of the existing public procurement laws and public procurement policies issued by the Cabinet. The different procuring entities (ministries, public institutions and decentralized administrative entities) submit their annual procurement plan and monthly procurement reports to RPPA, which provides them with supervision and technical assistance for capacity building and conducts audits regularly.

Provision of drugs, vaccines, and consumables from the Medical Procurement and Production Division (MPPD), to the 30 district pharmacies is regular and reliable, and stock-outs of drugs are rare and most often related to late requests by the health facilities. CHWs receive drugs regularly from the same supply route. District pharmacies have increased their efforts to align their interventions with GOR priorities and the health sector strategic and operational plans.The supply chain management system has streamlined and clear operational centers at central, district, health facility and community levels. Appropriate guidelines for management of commodities and pharmacovigilance, alongside a pre-service learning module, are available. Annual quantification for medicines and community needs assessment ensures a well-supplied pipeline.

Some challenges exist: absence of standard operating procedures (SOP) for procurement and supply chain management (PSM) at all levels; absence of formal documents with specifications of all antimalarial commodities; lengthy procurement procedures; and absence of feedback on the electronic Logistics Management Information System (e-LMIS). The MOH is, however, working with partners to address these challenges and strengthen the MPPD.

Ensuring the availability and quality control of medical commodities, drugs, and consumables, and instituting improved supply chain management are priorities addressed under this funding request.

The following information sources guide MOH/NMCP programmatic decision-making:

- *Health management information system (HMIS)*: The HMIS indicators and forms were revised and a new web-based platform (DHIS2), with geospatial information system capacity, was launched in 2010. The HMIS receives data from all public health facilities, with timely and accurate reporting reinforced through performance-based financing. As of late 2010, the system provided data on only laboratory-confirmed malaria outpatient cases, inpatient cases, and deaths, as well as data by age and gender on all-cause morbidity and mortality at individual facilities. Since 2012, the community information system SIS-COM has been linked to HMIS through DHIS2. Private sector treatments are currently not reported.
- *Community information system:* The community-based SIS-COM system includes community diagnosis, treatment, and essential drug logistic information. SIS-COM incorporates a real time, web-based data platform, with a minimum set of indicators. As of November 2012, all 30 districts were trained on the cell phone–based reporting system.
- *Integrated Disease Surveillance and Response (IDSR):* Surveillance activities are coordinated and streamlined throughout all levels of the health system from the community, health facility, district hospital and central levels. The MOH has conducted a surveillance assessment and is in the process of updating the current IDSR as well as computerizing the reporting and monitoring system. Cell phone–based reporting is also being piloted for IDSR. There is a functional weekly epidemiological reporting system in place.
- *Entomological surveillance*: The NMCP maintains entomologic surveillance across 12 sentinel sites.
- *LMIS:* A paper-based system harmonized across all programs launched in early 2011 provides basic data on drug consumption, lab commodities, and stock outs at health facilities, independent of the HMIS. Reports flow from health facilities to district offices to MPDD and will be used for quantification. An automated LMIS was rolled out in 2014, with improved data quality and access. LMIS data is reviewed by the NMCP through biannual quantification workshops with all district pharmacy directors
- *DHS/MIS:* These comprehensive nationwide household surveys provide a broad range of population-based data, including bed net indicators (ownership and use by vulnerable populations), and malaria parasitemia and anemia. Population-based indicators change rapidly in Rwanda; thus, the GOR repeats surveys every two years. A full DHS was completed in 2010, and an MIS was conducted in 2013 (Annex 6). The current MIS includes malaria-related behavioral questions but does not include biomarkers, but the upcoming 2014/2015 DHS will collect malaria and anemia biomarkers.
- *Research and routine monitoring activities:* Activities include participating in household surveys to track use of LLINs, monitoring drug and insecticide efficacy, evaluating community case management, participating in health facility surveys, and malaria in pregnancy.

Rwanda has a costed M&E Plan, which includes the disease integration effort being promoted by the MOH and is preparing a new National Strategic M&E Plan to be aligned with the 2013-2018 MSP. However, the 2011 Malaria Program Review (MPR) identified some challenges, including limited data on malaria-related socio-economic impact and no data reporting from private clinics and national referral hospitals (MPR report attached as Annex 8). The action points suggested to address the challenges were partially or completely implemented during 2012, including the strengthening of analysis and use of routine data for action at national level and building key malaria indicators into the HMIS data warehouse and dashboard (where users can view real-time graphs, charts, and maps of malaria, etc). However, incorporating referral hospitals and private clinics into the HMIS remains a challenge.

Planning at the district and facility levels is aligned to the HSSP III, annual operational plans show resource commitments from various stakeholders, and the budgeting process is supported by the ceilings provided by the MINECOFINthrough the Mid-Term Expenditure Framework (MTEF).

Joint Health Sector Reviews (JHSRs) take place annually, assessing the performance of the sector based on the annual HMIS report. On the basis of this review, annual sector/program indicators, targets and budgets are agreed for all levels of the health system and incorporated into a PBF contract which is signed at the appropriate level. At the top of the pyramid, the MOH signs with the Prime Minister's office. PBF indicators

are measured quarterly and individuals are compensated if PBF targets are met.

The PBF scheme in Rwanda has shown greatest effect on maternal and child health services that had the highest payment rates and needed the least effort from the service provider. The PBF had improved both the use and quality of maternal and child health services including malaria[1].

Compulsory diagnosis of malaria cases before treatment is one of the PBF indicators at health centers and the community PBF includes also treatment of fever within 24 hours.

Rwanda develops consolidated disease workplans and budgets including GOR and partner contributions, and reports on programmatic and financial progress on an annual basis per disease.

Partner assessments and past track record indicate that Rwanda has adequate national financial management and assurance systems. A GAVI Financial Management Assessment from 2013 notes: "In recognition of Rwanda's strong public financial management and leadership in aid effectiveness, GAVI is also willing to consider providing health systems strengthening (HSS) in Rwanda as health Sector Budget Support (SBS), if GOR/MOH would prefer this." A full Office of the Inspector General (OIG) Audit from 2011, which scope comprised US$ 350 million of disbursed funds, did not note any funds to be recovered following clarifications from the country.

Currently, there is a model in place for sustainable financing of health services through enhanced enrolment of people in CBHI from 7% in 2003 to 92% in 2013. However, the CBHI faces challenges in terms of both financial and institutional sustainability.

The majority of activities supported by partners are aligned with the MSP. Outstanding is the need for increased information on financial expenditures from all partners; 83% of the health sector is funded by external assistance, but only 1% of all external funds is channeled through SBS mechanisms.

Gaps in funding the malaria control program were greatly reduced with substantial external funding from the Global Fund and the United States of America President's Malaria Initiative (PMI). The funding gaps declined to 10% in 2011. However, history has shown (see MSP Annex 1 and Concept Note (CN) Section 1.2.c) thatthere is a danger of reversal of malaria gains in the upcoming implementation period with the reduced funding envelope.

Several enabling factors and initiatives – such as strong political will and commitment, improved access to health facilities, community-based programs, the introduction of performance-based approaches and CBHI – have enhanced good practices in the quality of care and increased access to and utilization of health services, mutual accountability, and efficiency at all levels in Rwanda.

Well-functioning health and community systems have been strengthened over recent years with support from Rwanda's development partners. With the reduced funding envelope in the upcoming implementation period, the proportion of support to health and community systems strengthening (HSS/CSS) will be reduced given the imperative to prioritize funding to essential prevention, diagnostic and treatment commodities.

For more details on Rwanda's procurement and supply chain management (PSM), surveillance and M&E, and financial management systems, see CN Section 4.3.

2-4 PAGES SUGGESTED

1.2 National Disease Strategic Plans

Withclearreferences to the current **national disease strategic plan(s)**and supporting documentation (include the name of the document and specific page reference), briefly summarize:

a. The key goals, objectives and priority program areas.

b. Implementationto date, including the main outcomes and impact achieved.

c. Limitations to implementation and any lessons learned that will inform future implementation. In particular, highlight how the inequalities and key constraints described in question1.1are being addressed.

[1]Pauline*t al. The Lancet*, Volume 377, Issue 9775, Pages 1421 - 1428, 23 April 2011.

d. The main areas of linkage to the national health strategy, including how implementation of this strategy impacts relevant disease outcomes.

e. For standard HIV or TB funding requests, describe existing TB/HIV collaborative activities, including linkages between the respective national TB and HIV programs in areas such as: diagnostics, service delivery, information systems and monitoring and evaluation, capacity building, policy development and coordination processes.

f. Country processes for reviewing and revising the national disease strategic plan(s) and results of these assessments. Explain the process and timeline for the development of a new plan(if current one is valid for 18 months or less from funding request start date), including how key populations will be meaningfully engaged.

a. The key goals, objectives and priority program areas

The Rwanda MSP 2013-2018has one goal:

- To achieve near zero deaths from malaria and reduce malaria burden to achieve a slide positivity rate (SPR) less than 5% in fever cases by 2018.

To achieve this goal, six specific objectives have been set out (see Annex 1 for details of the strategies to be implemented under each objective):

- Objective 1: By 2018, at least 90 % of the population at risk will be effectively protected with locally appropriate vector control interventions
- Objective 2: By 2018, all malaria cases will be tested with a quality assured diagnostic method and promptly treated in line with national guidelines
- Objective 3: By 2018, malaria morbidity measured by slide positivity rate will be less than 5% with six initial districts achieving this by 2016
- Objective 4: By 2018, all health units will report timely, completely and accurately on key malaria indicators
- Objective 5: By 2018, effective program management and coordination will be expanded to all levels, including multi-sectoral and regional partnerships
- Objective 6: By 2018, 95% of the population will have correct knowledge of malaria prevention and control

A multi-pronged approach

These objectives build upon successes that Rwanda has achieved in the successful scale up of malaria control interventions over the past ten years, and are aligned with the Global Malaria Action Plan (GMAP) and World Health Organization (WHO) policies and guidelines. Rwanda will continue to implement a multi-pronged approach to consolidate and sustain malaria gains and transition from malaria control to the pre-elimination phase (see MSP Annex 1 for more details on the main program areas).

Priority program areas

Vector control

Vector control interventions that aim to reduce vector-human contact and subsequently lower the intensity of malaria transmission will help Rwanda reach pre-elimination. Rwanda will attempt to maintain universal coverage of LLINs and continue to implement routine LLIN distribution via the Expanded Program on Immunization (EPI) for children < 1 year and ANC for primipara pregnant women to cover new cohorts. Targeted IRS with different efficacious insecticide classes in high-incidence sectors of high-burden districts will be used to mitigate pyrethroid insecticide resistance and conserve LLIN efficacy.

Although the WHO recommends blanket IRS and universal coverage of LLINs (1 LLIN for every two people at risk for malaria), due to financial constraints, Rwanda will need to prioritize high burden districts for both interventions and use HMIS and routine entomological monitoring (including insecticide resistance and LLIN durability testing) to monitor progress and impact.

Rwanda's Vector Control Needs Assessment (Annex 9) and resulting National Strategic Integrated Vector Management (IVM) Plan(Annex 10) and National Strategic Insecticide Resistance Management (IRM) Plan (Annex 11), both adopted in 2013 and based on the WHO Global Plan for Insecticide Resistance

Management (GPIRM), will be implemented building decentralized entomology capacity.

Case management

All malaria cases in Rwanda will be diagnosed either by microscopy at the health center or rapid diagnostic test (RDT) at the community and treated with ACTs. Rwanda will implement the T3 Initiative (Test. Treat. Track.). The NMCP will continue to implement integrated management of childhood illnesses (IMCI) training, and strengthen the prompt and effective treatment of severe malaria with the adoption of intravenous artesunate. Integrated Community Case Management (iCCM), implemented by 30,000 CHW working at community level, will continue to be supported and the need for prompt referral for treatment of severe malaria will be promoted. Severe malaria case audits and malaria death audits will be conducted. For pregnant women, Rwanda will pilot a new approach termed intermittent screening and treatment (IST) and is evaluating different implementation strategies.

Pre-elimination

In six districts, Rwanda will work to reduce the burden of malaria to SPR<1% or <5% to achieve malaria pre-elimination levels. Currently, this strategy is implemented in 6 districts selected based on malaria data of 2011-12. Following the current malaria situation and based on WHO recommendations , a Malaria Pre-Elimination Feasibility Assessment will be carried out with support of PMI to confirm/select the six districts will be chosen from among historically low burden districts . In the six districts, all fevers presenting at community and health facility levels will be tested and all health care workers will be trained on the utilization of a malaria notification system. All cases will be investigated to determine the source of infection and related details. Reactive case detection will be conducted around investigated cases in targeted districts and pro-active case detection will be carried out among high risk groups and areas where there is suspicion of ongoing transmission in malaria-free areas in the six districts.

All active foci in targeted areas will be investigated, mapped, identified and reported through in-depth investigation and appropriate interventions will be implemented to eliminate the identified foci. These will be followed up to make sure that the foci are no longer active. Mass drug administration is being revisited by the WHO for certain contexts and Rwanda will review the guidance and adopt as appropriate.

Surveillance and monitoring

This MSP outlines strategies for strengthening the malaria surveillance system and integrating it into the HMIS so that Rwanda will be able to identify and respond in a timely manner to trends in malaria at the decentralized level. This focused data analysis and response will allow the NMCP to target malaria resources more effectively on high incidence sectors or health centers. Efforts will be made to include reporting from the private sector through private sector regulations/laws (reporting as part of clinical services requirements for registration) and capacity building with support of the HMIS.

The plan proposes to update the malaria epidemic and preparedness and response plan.

The malaria stratification (epidemiological zones) will be updated using various data sources and malaria stratification will be conducted for local and imported malaria cases.

Several malaria surveys will be conducted including community coverage surveys, including: household survey such the DHS and MIS; a malaria contact survey in the North West Region; targeted localized fever surveys; and health facility surveys/assessments.

The program will develop a National Strategic M&E Plan aligned with the MSP which will include the M&E framework for regular monitoring of malaria status.

Rwanda will also develop and implement an enhanced surveillance system in six low-burden districts where confirmed malaria cases will be investigated and surveillance will transition from aggregated to individual case reporting. This system will provide the foundation for Rwanda to expand its pre-elimination ambitions.

Health systems and support systems

For rational use of resources and efficiencies, most malaria control interventions will be implemented through existing integrated service delivery platforms. This will include interventions on behavior change communication (BCC), integrated training and supervision, and iCCM. Rwanda will also find synergies between mother and child health (MCH), HIV, and tuberculosis (TB) programs to maximize program coverage and minimize costs.

Monthly supervisory visits (now reduced to quarterly due to financial constraints) and data quality audits will be conducted to monitor planned activities.

The program will advocate for increased domestic and international financing to the fight against malaria. A costed investment case for maintaining government resources into malaria and introducing a public-private partnership concept for supporting malaria investment will be developed. Funding proposals to international funding mechanisms/agencies will be prepared as opportunities arise.

Rwanda recognizes the value of working across different sectors to achieve malaria gains (see table in MSP Annex 1). The malaria program's IVM Plan, in particular, promotes multi-sectoral partnerships in the realm of vector control, incorporating collaborations with stakeholders including the Ministry of Agriculture (MINIAGRI), the Rwanda Environmental Management Administration (REMA), and the private sector working with insecticides.

Given the high burden of malaria in districts located at the border of neighboring countries, the MSP outlines the development and strengthening of collaborative and partnership initiatives as well as the development of a regional plan for cross-border collaboration in order to accelerate malaria control and pre-elimination in Rwanda and the region through existing regional bodies. Rwanda will aim to set up a cross border initiative with one country in the upcoming implementation period to serve as a demonstration of what can be achieved.

The Rwanda Malaria Advocacy, Communication and Social Mobilization Strategy will be reviewed to refine and evaluate integrated malaria messages.

Sensitization meetings in communities for enhanced participation/involvement will be conducted as well as community outreach activities to inform people on their roles and responsibilities in malaria control/pre-elimination using appropriate communication channels. Malaria behavior change and practices will be monitored through surveys for improved programming.

To advocate for the elimination agenda, the NMCP will conduct sensitization meetings for policy makers, members of parliament, and community leaders on malaria elimination and related activities including engagement of private sector partners and business leaders to support malaria elimination activities. Training of local leaders, CHWs and other stakeholders will be conducted as well as the training of public and private health staff on malaria control and pre-elimination.

b. Implementation to date, including the main outcomes and impact achieved

Malaria case management

In 2006, based on evidence resulting for drug monitoring efficacies carried out in Rwanda, Rwanda introduced ACTs as the first line therapy in all health facilities in the country. ACTs were then introduced at community level in 2007. In 2009, in response to an upsurge in malaria and recommendations from the WHO, Rwanda adopted a policy of universal parasitological diagnosis with microscopy in health facilities and RDTs at community level. In 2010, Rwanda had achieved one of the highest rates of parasitological diagnosis in Africa, with an estimated 94% of suspected malaria cases being parasitologically diagnosed through microscopy or RDTs in 2010 as compared to 56% in 2009. In 2012, 99.9% of all suspected malaria cases were tested before treatment.

Given significant decreases in malaria transmission and documented evidence of resistance to sulfadoxine-pyrimethamine(SP) and high prevalence of gene mutations for SP resistance [Dihydrofolataereductase (Dhfr), Dihydropteroate synthase (Dhps)] known to be associated with high-level antifolate resistance[2], Rwanda suspended the use of intermittent preventive therapy in pregnancy (IPTp) in 2008. As mentioned above, Rwanda will pilot a new approach termed intermittent screening and treatment (IST) and is evaluating different implementation strategies.

Integrated community case management

In 2004, home-based management of fever (HBM) was introduced and piloted in six districts where CHWs were elected by communities and trained in management of fever in children under five and provided with ACTs. Due to the success of the program, the NMCP scaled up to include all districts in 2008. Since 2009, RDTuse has been scaled up nationwide and is now the major tool used by CHWs to diagnose malaria at community level, and identify non-malaria fever cases for further examination of other illnesses, such as

[2]Karema C, Imwong M, Fanello CI, Stepniewska K, Uwimana A, Nakeesathit S, Dondorp A, Day NP, White NJ. Molecular correlates of high-level antifolateresistance in Rwandan children with *Plasmodium falciparum* malaria. *Antimicrobial Agents and Chemotherapy*2010;**54(1)**:477-83.

pneumonia and diarrhea. iCCM is delivered by approximately 30,000 CHWs based at the village level which greatly increases health care access and utilization. As a result 96% of children < 5 years with malaria were tested and treated with ACTs within 24 hours in 2013 while only 62% were treated within 24 hours in 2008.In 2013, iCCM accounted for over 50% of the confirmed malaria cases in the country.

Community-based support to pregnant women

Pregnant women are supported in the community by the ASM who monitor and track pregnant mothers in their catchment area to ensure that they make their focused antenatal care (FANC visits), receive their LLINs, know the signs and symptoms of malaria and to seek care immediately in case of suspected malaria, develop a birth plan and monitor for danger signs. Rwanda has 15,000 ASM; approximately one per village.

Vector control

The mainstay of vector control in Rwanda is universal coverage with LLINs targeting the entire population in the country. In 2006, the first integrated measles campaign resulted in high coverage with 57% of households owning at least one LLIN and 55% of children <five and 62% of pregnant women sleeping under a LLIN the previous night. In 2007, the government policy changed to universal coverage in line with WHO recommendations. In 2010-2011, Rwanda achieved high coverage in both LLIN ownership and utilization with the distribution of over 6.1 million LLINs. The 2010 DHS shows 82% of households owning at least one LLIN while the MIS 2013 shows household ownership of84%. Respectively, 70% and 74% of children <5 years slept under a mosquito net the night before the survey in the DHS 2010 and the MIS 2013. Overall, 72% of pregnant women aged 15-49 slept under a mosquito net the night before the survey.

IRS was initiated in 2007 in high transmission areas and initially covered the three districts of Kigali City and then expanded to the targeted rural districts. The latest IRS campaign was conducted from September to October 2013 and resulted in the coverage of an estimated 243,952 structures (targeted), protecting around 1,040,123 people. Rwanda is also implementing anIVM Plan that will improve assessment of the ecological soundness and cost-effectiveness of interventions for rational decision making. The IVM Plan was endorsed by stakeholders and then by the MOH in May 2013 (Annex 10).

Rwanda has documented emerging pyrethroid resistance through insecticide monitoring. The NMCP has developed an IRM Plan (Annex 11) in response topyrethroid resistance and has transitioned to the carbamate insecticide class for IRS.

Given Rwanda's success with LLINs, the NMCP has prioritized mitigating pyrethroid resistance with IRS in order to conserve the efficacy of the bednets. The NMCP will continue to monitor insecticide resistance and possibly adopt other insecticide classes for IRS if needed.

BCC and social mobilization

The behaviors that place populations at risk of malaria have been identified through quantitative and qualitative research and appropriate BCC activities have been implemented during World Malaria Day, Mother and Child Heath Week, Youth Week and Health Policy Week. As well as campaigns, multiple channels of communication have been used including radio, TV, newspapers, meetings, billboards, banners and songs.

A comparison of data from the 2007 DHS and 2010 rapid assessment showed evidence of behavior change resulting from previous BCC investments. For example, children < 5 years who slept under a LLIN the previous night increased from 60% in 2007 to 74% in 2013.

According to a 2012 knowledge, attitudes and practices (KAP) survey, 86% of respondents were able to identify malaria symptoms, most respondents knew that malaria spreads through mosquito bites (84%), that sleeping under a net protects from mosquito bites (89%), that insecticides can be used to protect against malaria (83%), that keeping ones house clean can protect from malaria (93%), and that the treatment of bed nets repels mosquitoes (97%).

Most recently in the MIS 2013, nearly all women (95%) are aware that mosquito bites 'cause' malaria and two in three women (66%) know that sleeping under a mosquito net protects against malaria. Three in four Rwandan women reported having seen or heard messages about malaria in the last six months before the survey. Nearly all women reported that malaria treatment can be received from the public sector. The most commonly cited source of information about malaria was the radio (79%), followed by CHWs (46%).

With relatively low transmission of malaria in many districts, reduced perceptions of risk of malaria, as well as in the face of financial constraints, the NMCP is developing new communication strategies using existing community structures adapted to ensure that people continue to consistently use prevention measures and

seek prompt diagnosis and treatment in cases of suspected malaria.

Health systems and support interventions

The scale up of interventions and impact on malaria are made possible by an exemplary organization and management of the health system as exemplified by integration and decentralization of malaria control at all levels, community involvement and participation performance-based pay for health workers who deliver key high quality interventions and meet targets. Access to health services is very high. There is also a well-organized referral system supported by ambulances at hospitals and cell-phone reporting by CHWs.

There is a sustainable financing of health services through enhanced enrolment of people in CBHI from 7% in 2003 to 92% in 2013.

There is strong political commitment to malaria control as shown by the presidential funding of training of CHWs and issue of phones to all 45,000 CHWs/AMSs.

Progress and impact

Evidence of progress in malaria control (Table 2)provided by HMIS include an 86% decline in malaria incidence between 2005 and 2011; 87% decline in outpatient malaria cases between 2005 and 2011; 74% decline in inpatient malaria deaths between 2005 and 2011; and 71% decline in malaria test positivity rate (TPR) between 2005 and 2011. Rwanda adopted, implemented and achieved universal LLIN coverage in 2010, and continues to implement routine LLIN distribution via EPI and antenatal care (ANC) to cover new cohorts.

Table 2: Evidence of progress in malaria control 2008 to 2013

HMIS indicators	2008	2009	2010	2011	2012	2013
Mortality attributable to malaria (all cause)	16.3%	19.2%	12.9%	6.4%	6.0%	4.9%
Incidence confirmed malaria cases (all ages)/1,000	80	128	61	26	48	93
Slide positivity rate (SPR) in fever cases	24%	54.3%	23.6%	13.1%	15.6%	29.0%
Proportion of morbidity attributed to malaria at health facilities	11.8%	15.2%	7.8%	3.0%	5.7%	9.9%
Proportion of <5 morbidity attributed to malaria at health facilities	8.1%	12.0%	7.9%	2.9%	4.0%	7.0%
Number of malaria attributed deaths at the health facilities	566	826	670	380	459	409

According to the 2010 DHS, malaria prevalence has decreased from 2.6% in 2008 to 1.4% in 2010 in children < 5 years and a decline from 1.4% in 2008 to 0.7% in 2010 of malaria prevalence in pregnant women.

As a result of the malaria control program implementation in Rwanda, malaria has moved from being the number one killer of children < 5 years of age to number 11 in 2011 and number 4 in 2013.

The malaria burden in Rwanda has transitioned from a nationwide distribution of the disease to a focal problem mostly in few high malaria burden districts along the borders with other countries in the Eastern and Southern provinces.

Rwanda has experienced and responded to two malaria upsurges related to issues with decreased coverage with effective LLINs, one in 2009 and another in 2012/2013.

For more details on implementation and progress to date, see Annex 1.

c. Limitations to implementation and any lessons learned that will inform future implementation. In particular, highlight how the inequalities and key constraints described in question 1.1 are being addressed

Two particular lessons learned for malaria program priority setting and planning, are:

- The correlation of malaria transmission – morbidity and mortality – with scaled up malaria control interventions, in particular with mass distributions of LLINs
- That malaria control gains are fragile in Rwanda.

Rwanda HMIS data reveal the success of malaria control, with significant decreases following mass distribution campaigns of LLINs (Figure 3), adoption of mandatory laboratory confirmation, introduction of the use of ACT, and national scale up of iCCM.

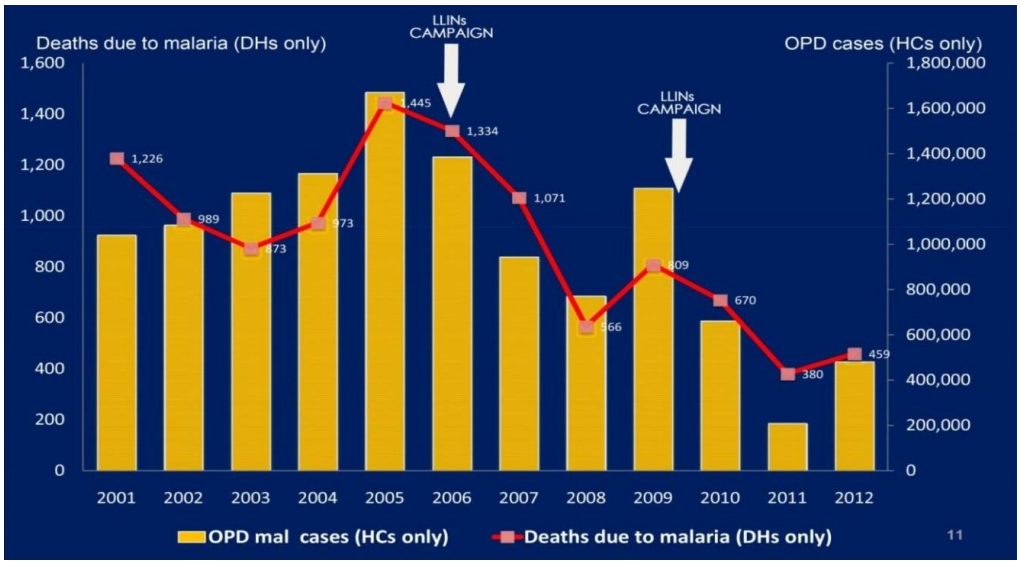
The HMIS showed significant declines in malaria in 2006 following a children <5 years targeted LLIN mass

campaign (around 3 million LLINs distributed) and the adoption of artemether-lumefantrine (Alu) as first line treatment. The HMIS also showed a significant decline in cases in late 2009 when Rwanda adopted the WHO recommendation of mandatory laboratory confirmation of all malaria cases by microscopy at health centers and by RDT at the community level before ACT treatment. Finally, the HMIS also documented unprecedented reductions in cases in early 2011 following the achievement of universal LLIN coverage after the mass distribution of over 6.1 million LLINs.

HMIS data also shows the fragile nature of malaria control, with documented upsurges in 2009 when a mass LLIN campaign (the follow up of the mass distribution of LLINs in 2006) was delayed until 2010 due to LLIN delivery delays (Annex 1).

At the end of 2012 and beginning of 2013, Rwanda has experienced another increase of malaria morbidity. This increase has been noticed particularly in districts known to be high malaria burden, and mostly located in the eastern and southern provinces which received LLINs at the end 2009 and beginning of 2010.

Figure 3: Rwanda's malaria control gains are fragile[3]



The observed increase in malaria in Rwanda two years following each mass LLIN distribution has since been confirmed with a three year longitudinal study that shows that LLINs in the field last around two years due to problems with holes (see Annex 1).

Maintenance of universal coverage of LLINs is the number one priority of the NMCP. Consequently, the NMCP conducted a prospective three year net durability and efficacy trial to show how long LLINs lasted in the field in Rwanda. Unlike the 3-5 years recommended by the manufacturers, over 50% of the LLINs were failing within 18 to 24 months due to holes. In addition to replacing LLINs when needed, the NMCP will continue to work with the appropriate institutions and organizations to stress the importance of LLIN care and repair and distribution of LLINs through the community via CHWs when needed. Initial work by United States Peace Corps volunteers has mobilized people with HIV to generate income in their community by providing net care and repair.

Interestingly, when the NMCP distributed three million LLINs in a number of high burden districts in late 2012 and early 2013, the HMIS showed a slight decline in malaria cases in the first couple months and then a significant increase in cases. Upon investigation, the NMCP found most of these LLINs to be sub-standard with low WHO bioefficacy after six months and low initial insecticide concentration measured by high performance liquid chromatography (HPLC). The NMCP responded to this increase by redistributing a number of LLINs from another manufacturer targeting high burden districts. The HMIS subsequently confirmed a reduction in malaria cases following the distribution of these other LLINs. Consequently, the original manufacturer lost its WHO Evaluation Scheme (WHOPES) approval in late 2013 (Annex 1).

As noted above, Rwanda has documented emerging pyrethroid resistance through insecticide monitoring. The NMCP has developed an IRM Plan (Annex 11)in response to pyrethroid resistance and has transitioned to the carbamate insecticide class for IRS.

[3] http://www.ncbi.nlm.nih.gov/pubmed/22823945

Given the high burden of malaria in districts located at the border of neighboring countries, Rwanda, considering pre-elimination, will remain vulnerable while malaria remains at current levels in these neighboring districts. The MSP outlines the development and strengthening of collaborative and partnership initiatives as well as the development of a regional plan for cross-border collaboration in order to accelerate malaria control and pre-elimination in Rwanda and the region through existing regional bodies. Rwanda will aim to set up a cross border initiative with one country in the upcoming implementation period to serve as a demonstration of what can be achieved.

Despite Rwanda's remarkable progress in ensuring appropriate malaria diagnosis before treatment with ACTs, there were ACT stock outs in the last quarter of 2012 caused by a delay in the arrival of Global Fund ACTs, especially those targeted for use at the community level. PMI was able to respond to a ministerial emergency ACT request by procuring 300,000 ACTs not planned in 2013. The stock outs also created an opportunity for MPPD, NMCP and PMI to further improve data sharing and transparency for forecasting and planning.

d. The main areas of linkage to the national health strategy, including how implementation of this strategy impacts relevant disease outcomes

The extensive health sector situation analysis conducted in the second half of 2011, together with a comprehensive HSSP II Mid-Term Review, provided the necessary information on Rwanda's burden of diseases (for Malaria, HIV/AIDS, TB, and neglected tropical diseases) and its epidemiological profile to decide on the overall five priorities of HSSP III. The fight against malaria continued through sustaining achievements in the fight for maternal and child health and against infectious diseases – Millennium Development Goals (MDGs) 1 (nutrition), 4 (child mortality), 5 (maternal mortality) and 6 (disease control) – which have been adopted as key priorities for the HSSP III implementation.

The HSSP III aims to sustain malaria gains and move the country forward toward pre-elimination of malaria in Rwanda through strengthening existing key malaria control interventions. HSSP III states that: "despite success and high rate of achievements, malaria is still rated the fourth major cause of mortality in Rwanda and remains a significant burden on the economy and the health system".

The gap analysis and planning process of the health sector includes all health stakeholders (GOR, bilaterals and multilaterals). Itwas conducted under the Health Sector Working Group and is included in the HSSP III. Budget allocation per specific diseases is done in an iterative manner and is presented and approved by the Country Coordinating Mechanism (CCM).Specific areas of integration across disease programs include: training, supervision and the implementation of iCCM.

Malaria control efforts, combined with significant improvements in maternal and child health, vaccinations, and HIV/AIDS, have reduced all-cause under-five mortality by 50%, from 152 deaths per 1,000 live births in 2005 to 76 deaths per 1,000 live births in 2010.

e. Country processes for reviewing and revising the national disease strategic plan(s) and results of these assessments. Explain the process and timeline for the development of a new plan (if current one is valid for 18 months or less from funding request start date), including how key populations will be meaningfully engaged

The MSP 2013-2018 has been developed through an intensive consultative process over many months with all malaria technical partners and stakeholders (Annex 1). The process started in 2011/2012 with initial discussions on the previous strategic plan. The NMCP and partners used the 2011 MPR(Annex 8) and the 2012 Malaria Pre-Elimination Forum (Annex 12) to further discuss critical areas and identify weaknesses, strengths and opportunities that have informed the current MSP. Many meetings have been held to discuss and review drafts of the MSP and all partners have had the opportunity to input into the process which has been iterative. As the recent Joint Assessment of National Strategies (JANS) report (Annex 13) indicated, "the MSP was developed through an inclusive process. Civil society organizations (CSOs), implementing and funding development partners feel that they were fully engaged and involved and provided evidence of their contributions being included in the plan". There is clear evidence of broad stakeholder participation and understanding of the MSP. The JANS review and feedback has also contributed to improving the MSP more specifically in updating information in the MSP, ensuring more appropriate costing and prioritization of interventions and monitoring and evaluation.

The process of prioritization of key malaria interventions in the context of declining resources was discussed and the contributions of all stakeholders informed the priorities in the MSP and the CN. These prioritized interventions and the rationale for their selection were presented and discussed in the CCM and agreed

upon.

The collaboration between Global Fund, PMI, and the NMCP is very good and participation in the JANS from The United Nations Children's Fund (UNICEF), Roll Back Malaria (RBM), WHO, the United States Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC), and the MOH (central and districts) made the fiscal year (FY) 2015 Malaria Operational Plan (MOP) process which occurred concurrently with the JANS review of the MSP, one of the most inclusive and iterative to date.This close collaboration has continued during the development of this CN.

A Pre-Elimination Assessment will be conducted in 2015 to inform the implementation of Objective 3.

Rwanda plans a mid-term MPR for the end of 2016/early 2017.

4-5PAGES SUGGESTED

SECTION 2: FUNDING LANDSCAPE, ADDITIONALITY AND SUSTAINABILITY

To achieve lasting impact against the three diseases, financial commitments from domestic sources must play a key role in a national strategy. Global Fund allocates resources which are far from sufficient to address the full cost of a technically sound program. It is therefore critical to assess how the funding requested fits within the overall funding landscape and how the national government plans to commit increased resources to the national disease program and health sector each year.

2.1 Overall Funding Landscape for Upcoming Implementation Period

In order to understand the overall funding landscape of the national program and how this funding request fits within this, briefly describe:

a. The availability of funds for each program area and the source of such funding (government and/or donor). Highlight any program areas that are adequately resourced (and are therefore not included in the request to the Global Fund).

b. How the proposed Global Fund investment has leveraged other donor resources.

c. For program areas that have significant funding gaps, planned actions to address these gaps.

2.1.a The availability of funds

In the upcoming implementation period, funding for the national malaria control program in Rwanda will come from three main sources: the GOR,PMI and the Global Fund.

Government of Rwanda

The GOR has committed a total of US$ 12.26 million[4] for the upcoming three-year implementation period 2015-2017.

The GOR contribution is predominantly allocated to costs related to human resources, infrastructure, quality and demand for services, sensitization, health-insurance coverage for the poorest of the poor and specialized health services.

PMI

PMI has committed an estimated US$ 17.5 million in MOP 14, US$ 18 million for malaria control in 2015, and is targeting a contribution of US$18 million/year for 2016 and 2017; a total of US$ 58million for the upcoming implementation period. With this contribution, PMI in agreement with the NMCP, is expected to support the following interventions:

Prevention:

1. LLINs – procure and distribute LLINs through routine distribution channels to contribute to maintenance of universal coverage;

[4] Based on the calculated spend January 2015 to December 2017 as detailed in the 2015-2017 Operational Plan, taking into account the GOR FY.

2. IRS – support spraying of approximately structures annually over one or two rounds (depending on insecticide choice) in targeted districts based on epidemiologic and entomologic data.

Case management:

1. Diagnosis in the community – procure RDTs and safety boxes to support laboratory diagnostic confirmation prior to treatment through community case management.
2. Community case management – strengthen iCCM integrated into the full community health care package in 7 out of 30 districts
3. Support for case management at health facility level – procurement of ACTs and lab supplies.
4. Support quality assurance (QA) / quality control (QC) at community level through health facilities and district hospitals.

Surveillance, monitoring, and evaluation:

1. Enhance decentralized surveillance to generate timely, high-quality, and individual-based data to track, analyze, and respond to malaria trends to support malaria pre-elimination activities in 5 to 10 districts.
2. Epidemic surveillance and response (ESR) – continue to strengthen the ESR system by developing new epidemic thresholds and developing standardized operating protocols.
3. Document increases in malaria indicators, reductions in malaria burden both in terms of entomologic and epidemiologic parameters, and measure outcome and impact through surveys.

Global Fund

At the time of development of this CN, Rwanda has one active Global Fund malaria grant that has been implemented since July 2011. The grant end date has been extended from June 2014 through to December 2014 with the addition of US$ 6 million in Global Fund interim funding to ensure continuity of operations until the start of the Results Based Financing (RBF) model grant in January 2015 (see CN Section 3.2.1 for detail on the RBF).

The Global Fund allocation January 2015 to December 2017to support the malaria control program in Rwanda has been set at US$ 43,968,857 . Depending on the execution rate of the PR, this may be increased by carry-over from the US$ 6 million interim funding provision.

Other development assistance for malaria comes from the RBM Partnership and WHO.

Planned use of available resources

The planned use of the anticipated resource envelope from all parties (GOR, PMI and Global Fund) to support each of the program areas / MSP objectives is shown in CN Section 2.3.2 Table 3. Global Fund support to IRS and BCC will be limited.

The funding gap

Under the RBF model, the Global Fund will finance a part of the MSP and fully align funding to national processes, cycles and systems. The MSP covers the period 2013-2018, and has been costed based on fiscal years running 1 July to 30 June in alignment with the financial schedules used by the Rwandan Government. The budget data used in this CN was developed using a conventional excel costing model[5]. It has been validated and reviewed by external partners, including the Global Fund Secretariat, using the JANS principles to confirm that the costing methodology is justified and realistic.

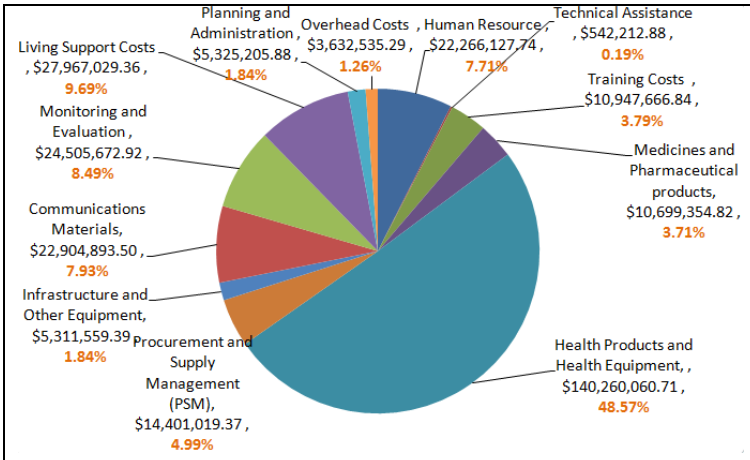
Full implementation of the MSP 2013-2018 has been costed at US$ 287 million over five years. As shown in Figure 4, major cost drivers are malaria commodities, in particular LLINs and IRS. MSP Objective 1 – Vector control and Objective 2 – Case management together are costed at US$ 216,717,114 over five years.

The three-year 2015-2017 MSP budget based on full implementation totals approximately US$ 187.9 million.

At the current time, the projected available 2015-2017 funding envelope for malaria totals approximately US$ 114 million[6].

Figure 4: Rwanda MSP five-year budget by cost categories

[5]An annual adjustment factor of +2.07% is used throughout the budget based on guidance from MTEF Guidelines of MINECOFIN.
[6]Note that Rwanda is not eligible for incentive funding for malaria.



2.1.b use of Global Fund resources to leverage other donor resources

In the 2013-2018 MSP, the NMCP has coordinated and prioritized activities to maximize the impact of Global Fund and PMI resources by ensuring that the activities funded are complementary, avoid duplication, and afford program efficiencies and cost savings by playing to each partners' strengths (see CN Section 1.2.e.).

For example, certain activities carried out with Global Fund support through the NMCP and government systems, i.e. MINECOFIN and local governments, create efficiencies through leveraging local logistics and warehousing systems, and payment arrangements for seasonal staff e.g. for IRS. Conversely, Global Fund resources are sometimes constrained e.g. by a lack of flexibility in procurement. PMI procurement, however, affords flexibility with emergency funds and emergency stock supplies e.g.ACTs and RDTs which can be mobilized within days rather than months.

With limited resources, these synergies that build on Global Fund and PMI strengths and mitigate challenges are paramount for the NMCP to achieve the objectives and goal of the MSP.

2.1.c Planned actions to address the gaps

Diversification of the funding base

In order to mitigate against any adverse effects the GOR will seek to diversify the funding base for malaria to cover short-term gaps and ensure the long-term sustainability of the malaria program.

The GOR will aim to reach out beyond traditional partners to mobilize new resources e.g. to private and corporate sector partners in the telecommunications and agricultural sectors and to multinationals working in Rwanda. It is expected that some of these partners will support the GOR efforts in malaria control under their Corporate Social Responsibility (CSR) programs.

In addition, the NMCP will explore the possibility of employee-based support schemes in the provision of LLINS and implementation of IRS as appropriate. The MOH will work with the CBHI and PBF to maximize support for malaria specific care and activities.

To mobilize internal and external resources, the NMCP with partners will develop and implement a resource mobilization and advocacy strategy. The strategy will articulate the need, gaps and support required to reach pre-elimination by 2018 and also to sustain the gains made in malaria control.

Maximizing use of available resources

The GOR is already implementing an integrated health package. However, additional efforts will be made to identify innovative ways to increase efficiency and bring down costs throughout the health care sector e.g. by introducing integrated supervisions and trainings.

Leveraging CBHI and PBF

The program is looking at an opportunity to negotiate with the CBHI to add a one fee payment for the highest wealth quintile (CBHI index 5-6; Annex 5) on an annually basis to pay for LLINs. Currently, the CBHI covers categories 1-4. Since CHW's PBF has been invested into community income generating cooperatives, the program is looking into leveraging their financial interest to pay CHW household visits, monitoring LLIN use, and treatment of children under five at the community level.

1-2 PAGES SUGGESTED

2.2Counterpart Financing Requirements

Complete the Financial Gap Analysis and Counterpart Financing Table (Table1). The counterpart financing requirements are set forth in the Global Fund Eligibility and Counterpart Financing Policy.

a. Indicate below whether the counterpart financing requirements have been met. If not, provide a justification that includes actions planned during implementation to reach compliance.

Counterpart Financing Requirements	Compliant?	If not, provide a brief justification and planned actions
i. Availability of reliable data to assess compliance	√ Yes ☐ No	
ii. Minimum threshold government contribution to disease program (low income-5%, lower lower-middle income-20%, upper lower-middle income-40%, upper middle income-60%)	√ Yes ☐ No	
iii. Increasing government contribution to disease program	√ Yes ☐ No	

b. Compared to previous years, what additional government investments are committed to the national programs in the next implementation period that counts towards accessing the willingness-to-pay allocation from the Global Fund. Clearly specify the interventions or activities that are expected to be financed by the additional government resources and indicate how realization of these commitments will be tracked and reported.

c. Provide an assessment of the completeness and reliability of financial data reported, including any assumptions and caveats associated with the figures.

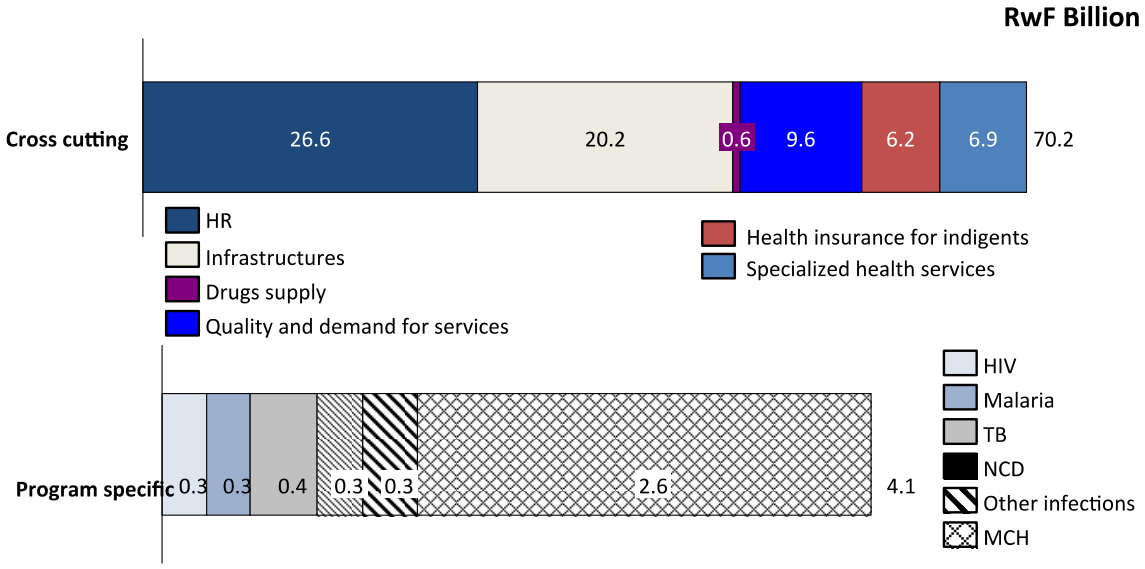
The Government of Rwanda (GOR) has been gradually financing its health programs over the years. The GOR funds are allocated to different health programs during the annual planning and budgeting process, which entails prioritization process that happens at the Ministry, RBC and Decentralized levels. The HSSPIII and different Strategic plans serve as guiding document and the planning phase also uses the disease burden and services utilization data to inform an effective resource allocation. The output from this process is entirely reflected in the Mid-Term Expenditure Framework (MTEF) that becomes part of the budget law voted by the Parliament.

In line with Rwanda health policy, the GOR financing mechanism aligns to the integrated health care, especially building a strong health system that supports the realization of better and equitable health for all Rwandans.

A part, program specific financing, the estimation of Counterpart financing takes into consideration all other health related programs costs, categorized as health systems strengthening costs in the following major categories:

- Human resources (salaries)
- Infrastructures (including constructions, renovation and equipment)
- Quality of services (including performance based financing and accreditation programs)
- Specialized health services
- Health commodities (drugs, consumables…)
- Health insurance (e.g. indigents)

Total health sector expenditures by cost categories, fiscal year 2012-13



Malaria control program is one of the priorities targeted by GOR financing and benefits from both programs specific financing mechanism, as well as malaria takes share of health system strengthening GOR funds. Using the fiscal year 2012-2013 financial data, Malaria program received about Rwf 257,997,911 as specific program funding and it was estimated that, its share of HSS funds, was about Rwf 1,140,752,911**78**.

Compared to other diseases, malaria constituted ~3% share of causes of admission and outpatient consultations. The other causes being HIV and AIDS (15%), Tuberculosis (2%), Other infections (22%) Maternal and child diseases/medical conditions (39%) and Non communicable diseases (19%)**9**.

2-3 PAGES SUGGESTED

SECTION 3: FUNDING REQUEST TO THE GLOBAL FUND

This section details the request for funding and how the investment is strategically targeted to achieve greater impact on the disease and health systems**.** It requests an analysis of the key programmatic gaps, which forms the basis upon which the request is prioritized. The modular template (Table 3) organizes the request to clearly link the selected modules of interventions to the goals and objectives of the program, and associates these with indicators, targets, and costs.

[7]Mid term expenditure Framework 2012-2013
[8] Health resources tacking tool data, 2013
[9]HMIS and SISCOM data, 2012, 2013

3.1 Programmatic Gap Analysis

A programmatic gap analysis needs to be conducted for the three to six priority modules within the applicant's funding request.

Complete a programmatic gap table (Table2) detailing the quantifiable priority modules within the applicant's funding request.Ensure that the coverage levels for the priority modules selected are consistent with the coverage targets in section D of the modular template (Table3).

Foranyselected prioritymodulesthat are difficult to quantify (i.e. not service delivery modules), explain the gaps, the types of activities in place, the populations or groups involved, and the current funding sources and gaps.

1-2 PAGES

SUGGESTED – *only for modules that are difficult to quantify*

3.2 Applicant Funding Request

Provide a strategicoverview of the applicant's funding request to the Global Fund,including both the proposed investment of the allocation amount and the request above this amount. Describehow it addresses the gaps and constraints described in questions1, 2 and 3.1. If the Global Fund is supporting existing programs, explain how they will be adapted to maximize impact.

3.2.aThe results-based financing (RBF) model

The Global Fund RBF model being piloted in Rwanda starting with the HIV grant, takes the form of a performance contract that is based on a pre-defined set of indicators that are part of the national disease strategic plan and agreed with technical partners.Grant disbursements are directly tied to performance towards this set of indicators.

The main reasons why Rwandahas been invited to pilot the new model are that the country has:

- A proven track record of achieving impact
- Strong political commitment to fight the three diseases, and to do it with increased ownership
- Strong, adequate systems and processes in place that can support the realization of that vision.

Rwanda has now been invited to expand the pilot under the malaria Global Fund allocation funding request and the CCM has decided to approve the submission of this Malaria RBF CN.

Advantages for Rwanda in adopting the RBF model are expected to include:

- Increased country ownership, full strategic alignment, alignment with and use of national systems with reduced transaction costs and harmonization, and enhanced mutual accountability between the country and the Global Fund
- A more flexible use of grant funds within pre-agreed parameters, as the Global Fund will move away from management of inputs (detailed budgets)
- A focus on the measurement of a small number of selected key indicators at intervals tied to the disbursement schedule (and limited intermediate measurements) with streamlined reporting
- Incentives for the country to focus on high-impact and value for money interventions as disbursements will be directly tied to performance and any savings made may be reinvested in the national response.

3.2.b Global Fund support to MSP implementation

The overall Global Fund support requested 2015-2017 – alongside the support requested from PMI and provided by the GOR – to support the achievement of the MSP goal of achieving a near zero deaths from malaria and reduced malaria burden to achieve a slide positivity rate less than 5% in fever cases by 2018 is shown in Table 2.

The total funding requested from the Global Fund under the new RBF grant is US$ 43,968,857.

Table 2: Projected funding to support the MSP goal to achieve near zero deaths from malaria and

reduce malaria burden to achieve a slide positivity rate less than 5% in fever cases by 2018				
FY	GOR[10]	PMI[11]	Global Fund (existing)	Global Fund[12] (requested)
2014	3,687,316	17,500,000	20,832,443	0
2015	3,982,301	18,000,000	0	9,616,920
2016	4,129,796	18,000,000	0	28,353,123
2017	4,277,286	18,000,000	0	5,998,814

The breakdown of the Global Fund support requested – alongside the support requested from the PMI and provided by the GOR – to support the achievement of each of the MSP's six objectives over the three-year implementation period is as shown in Table 3.

Table 3: Projected available funding to support the six MSP objectives within the prioritized MSP Operational Plan 2015-2017 (Annex 14[13])

Objective	GOR (actual + projected)	PMI (actual + projected)	Global Fund (requested)	Total per objective
Objective 1: By 2018, at least 90 % of the population at risk will be effectively protected with locally appropriate vector control interventions	221,239	39,962,495	19,978,453	60,162,187
Objective 2: By 2018, all malaria cases will be tested with a quality assured diagnostic method and promptly treated in line with the national guidelines	73,746	10,620,605	12,416,644	23,110,996
Objective 3: By 2018, malaria morbidity measured by slide positivity rate will be less than 5% with six initial districts achieving this by 2016	29,499	2,199,200	2,992,594	5,221,293
Objective 4: By 2018, all health units will report timely, completely and accurately on key malaria indicators	0	4,917,700	2,932,021	7,849,721
Objective 5: By 2018, effective program management and coordination will be expanded to all levels including multi-sectoral and regional partnerships	11,930,679	0	5,649,145	17,579,823
Objective 6: By 2018, 95% of the population will have correct knowledge of malaria prevention and control	2,950	300,000	0	302,950
Sub-total per funding source	12,258,113	58,000,000	43,968,857	
Grand total				114,226,970

3.2.c Use of the MSP operational plan to set priorities for the implementation period

In Section 2.1.a, it was noted that the MSP 2015-2017 budget based on full implementation had been costed at US$ 187.9, resulting in a funding gap of US$ 81.64.

The methodology used by the NMCP and stakeholders to determine what components of the MSP to include in the RBF funding request to the Global Fund is outlined below.

The MSP 2015-2017 Operational Plan was subjected to an initial prioritization exercise aimed at reducing the scope of the operational plan and accompanying budget while maintaining Rwanda's malaria control gains and avoiding a resurgence of the disease.

The prioritizing process: involved all malaria stakeholders (WHO, UNICEF, MOH – central and decentralized – USAID, CDC, NGOs and PMI); focused on the key drivers of malaria control (LLINs, IRS, diagnosis and

[10]Fiscal year July to June.
[11] Fiscal year October to September.
[12] Fiscal year July to June, aligned with the GOR.
[13]Note that the annexed Operational Plan Budget totals US$ 114,226,970 as it includes additional PMI funding for the quarter October to December 2014 covering IRS operations.

treatment); identified efficiency gains; aimed to maximize impacts and outcomes based on historical trends and evidence; and used costing assumptions based on real figures.

In this first round of prioritizing, based on the identification of high impact malaria interventions, malaria stakeholders jointly identified provision of LLINs (maintaining universal coverage), IRS, diagnosis and treatment, surveillance and M&E as the highest priorities for Rwanda, and agreed on priority interventions totaling US$ 133.8 million (Table 4).

The NMCP and stakeholders subsequently met to agree strategies to reduce the budget further to the projected available funding envelope of US$ 114,226,970. In this second round of prioritization, the major strategic decision was to replace the planned mass distribution of nets in 2016 to achieve universal coverage with a targeted campaign to high-burden districts accounting for 95% of the malaria burden in the country.

Annex 15 shows the key malaria interventions eventually set as priority in order to achieve the three-year MSP targets and maximize use of the available funding envelope. Malaria activities by district and malaria transmission zones as per the last malaria stratification 2013 are detailed.

Table 4: Overview of the process of prioritizing the MSP 2015-2017 budget

Objective	MSP Comprehensive Budget 2015-2017 (US$)	Initial round of priority setting – Budget 2015-2017 (US$)	Final round of priority setting – Budget 2015-2017 (US$)	Main prioritizing actions taken
Objective 1: By 2018, at least 90 % of the population at risk will be effectively protected with locally appropriate vector control interventions	109,712,446	77,590,442	60,162,187	Limit replacement of the remaining sub-standard LLINs previously distributed to those distributed through EPI (see CN Section 1.2.c) Replace mass distribution of nets in 2016 to achieve universal coverage with targeted campaign to high-burden districts Reduce number of IRS rounds in 2015/16 and 2016/17
Objective 2: By 2018, all malaria cases will be tested with a quality assured diagnostic method and promptly treated in line with the national guidelines	32,625,151	27,302,703	23,110,996	Procurement of RDTs and ACTs prioritized Support activities, including training, revision of reporting tools, CHW kits and other equipment reduced
Objective 3: By 2018, malaria morbidity measured by slide positivity rate will be less than 5% with six initial districts achieving this by 2016	5,384,795	4,517,807	5,221,293	Focus on setting up and implementing key systems Reduced budget for staff training
Objective 4: By 2018, all health units will report timely, completely and accurately on key malaria indicators	8,075,226	6,058,747	7,849,721	Routine data analysis trainings removed
Objective 5: By 2018, effective program management and coordination will be	18,592,528	11,069,399	17,579,823	Agreement on efficiency gains, including the implementation of integrated supervisions

expanded to all levels including multi-sectoral and regional partnerships				and joint trainings where possible with other disease programs Meetings budget reduced NGO overheads reduced
Objective 6: By 2018, 95% of the population will have correct knowledge of malaria prevention and control	13,609,516	7,268,608	302,950	Budget for mass media messaging (radio, TV; billboards etc) significantly cut
TOTAL	187,999,661	133, 807,706	114,226,970	

2015-2017 priorities

Objective 1: By 2018, at least 90% of the population at risk will be effectively protected with locally appropriate vector control interventions

LLINs

The procurement and distribution of LLINs remain the highest priority given the evidence outlined in the MSP (Annex 1) and CN Section 1.2.c of the strong correlation between increased access to insecticidal nets and decreased malaria morbidity and mortality.

Due to financial constraints, the planned mass distribution of nets in 2016 to achieve universal coverage with new LLINs will be replaced by a targeted campaign to:

- 19 districts that account for 65% of the total population of Rwanda and 96% of the malaria burden – involving the distribution of 4,962,076 nets representing 63% of the total need (down from 7 million required for universal coverage).

To meet the needs of malaria key populations, LLINs will continue to be distributed:

- Through EPI to **all** children < 1 year attending for measles vaccination – representing 4.1% of the population annually;
- Through ANC to **all** primipara pregnant women – representing 2% of the population annually;
- Through targeted mass HH distribution.

An additional 460,000 nets will be distributed in 2014/15 to replace the sub-standard nets previously distributed to children < 1 year at EPI (but the remaining sub-standard nets will not be replaced).The EPI recipients of the sub-standard nets will be identified from health centre records and CHWs will distribute the replacement nets.

With reference to the programmatic gap analysis table, it can be seen that financial constraints will mean that Rwanda will not have nets for community distribution. This channel has historically been used to ensure coverage of hospitals/health centers, children in boarding schools, military/police personnel living in camps, and refugees living in camps.

Under this channel, Rwanda intended to pilot an innovative continuous household distribution approach via CHW and/or CHW cooperatives.The intention is to develop a better understanding of the feasibility, cost-effectiveness and coverage levels obtained by using the different available community channels to augment traditional EPI and ANC channels for the maintenance of universal coverage. Lessons learned during 2015 and 2016, would provide a basis for the scale up of this mode of continuous net distribution in the future as Rwanda addresses the need to maintain net coverage following the 2016 targeted mass distribution.

It is important to note that the number of LLINs to be prioritized will vary depending on the unit cost of LLINs based on the market availability. For this purpose, the NMCP has run two LLIN scenarios based on LLIN procurement at different unit costs (US$ 3.81 versus US$ 5.17). The higher LLIN-cost scenario is included in the concept note and any eventual cost savings from lower LLIN unit costs would be used to procure more LLINs towards maintaining Rwanda's number one priority of universal LLIN coverage. (The lower cost scenario is attached as an additional sheet of the programmatic gap table.)

These costs originate from the low and high extremes of the Global Fund Procurement Framework contracts. Rwanda will buy more LLINs if any additional reductions occur in the international pricing of LLINs which, however, is doubtful over the next three years given the supply and demand.

Operational costs associated with the LLIN supply chain in-country have been reduced as the NMCP have

determined that the unit cost of transporting LLINs from the central to the district level can be reduced by organizing for district pharmacies (rather than private contractors) to transport them. Other means to reduce the delivery of LLINs to land-locked Rwanda will be investigated.

PMI will support an assessment to determine if LLIN disposal is a problem or if LLINs are being re-purposed appropriately. If issues are noted, PMI will provide technical assistance to develop and implement a disposal strategy.

Given that Rwanda will not implement universal coverage with the risk of malaria upsurges in districts not covered, the NMCP with partners will intensify surveillance through close monitoring and follow up using data of the integrated HMIS. The NMCP will collaborate with Epidemic Infectious Disease (EID) Division to integrated malaria through the weekly report of IDSR and through decentralized levels. CHWs will be sensitized to alert on any upsurge of malaria cases within their communities using their phones as part of the existing community health surveillance system.

IRS

IRS will serve three strategic purposes:

- Routine spraying in selected districts that have some or all of the following characteristics
  - High burden districts
  - Districts with confirmed pyrethroid resistance
  - Districts that border high-burden endemic countries
- Malaria outbreak control
- Control of malaria transmission foci in the malaria pre-elimination districts.

IRS will be used as part of an IVM strategy as outlined in the Rwanda IVM Plan. Since 2007,IRS has been implemented in up to seven districts based on entomological and epidemiological data. At present, IRS is implemented in three high burden districts (Nyagatare, Bugesera and Gisagara) that border other countries with documented pyrethroid insecticide resistance and high malaria burden. Over the next three years, the NMCP will possibly also target high malaria incidence sectors in three additional districts (Kirehe, Nyanza and Ruzizi).

Taking into accountthe need to comply with the Rwanda Supplemental Environmental Assessment (Annex 16) which covers all districts with any insecticide until 2016, targeted districts will be identified on an annual basis using evidence (burden of disease and entomological data).IRS in combination with LLINs will be used both to reduce malaria burden and to mitigate pyrethroid resistance, where indicated, in an effort to conserve LLIN efficacy. The effect of IRS on pyrethroid insecticide resistance will be monitored.

Rwanda has adopted the WHO's GPIRM in itsIRM Plan. Rwanda has prioritized IRS for insecticide resistance mitigation as recommended by GPIRM. GPIRM also recommends annual pre-emptive insecticide rotation. However, the financial implications of rotating insecticides pre-emptivelyis prohibitivei.e. covering 250,000 structures with pyrethroids costs US$ 446,428, with carbamates it costs US$ 2,321,428 and with acetellic it would cost US$ 4,642,857). Therefore, Rwanda will use entomological evidence to guide IRS rotation in the future.

Rwanda also acknowledges the ongoing debate on the efficacy of IRS plus LLINs and WHO's 2014 guidance[14] that: "limited utility in reducing malaria morbidity and mortality". However, the guidance also mentions that this is not the case where IRS is implemented as an IRM strategy which applies to Rwanda. Rwanda HMIS from 2013 and 2014 also show that carbamate spraying does reduce malaria morbidity specifically in Nyagatare which historically is Rwanda's highest malaria burden district. Studies are also showing the added benefit where IRS is properly targeted and insecticide resistance profiles are monitored (Benin[15], Tanzania[16], The Gambia[17] and Ethiopia[18]). Further studies are required and underway but IRS is the only tool to mitigate pyrethroid resistance, as highlighted in WHO guidance 2014, which is the number one threat for reducing

[14] http://www.who.int/malaria/publications/atoz/who-guidance-combining-irs_llins-mar2014.pdf
[15] http://www.malariajournal.com/content/10/1/343
[16] http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001630
[17] http://www.ncbi.nlm.nih.gov/pubmed/24678605
[18] http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0074351

the efficacy of LLINs in Rwanda.

Due to budget constraints, exacerbated by the need to switch from pyrethroids to higher-cost insecticides, the total number of structures targeted for routine IRS will be approximately 267,000 structures in 2015 and 167,000 structures each year in 2016/2017.

Operational costs for IRS have been reduced recently as the GOR, with support from PMI, has steadily built its capacity to implement IRS.

Other

- Implement, monitor and evaluate/adapt the IVM Plan.
- Implement, monitor and evaluate/adapt the IRM Plan.
- Generate local evidence to guide optimal use of available vector control interventions via 12 sentinel sites.

The IRM plan calls for support to the NMCP for continued, high-quality entomological monitoring and maintaining entomologic surveillance across 12 sentinel sites. Building capacity in this key area is a priority under the funding request.

Objective 2: By 2018, all malaria cases will be tested with a quality assured diagnostic method and promptly treated in line with the national guidelines

In the upcoming implementation period, funding to ensure universal access to quality case management with RDTs and ACTs at all levels of the health system and through iCCM at community level remains a priority.

Rwanda will continue to follow WHO recommendations and implement the T3 initiative (Test, treat, track) which is aimed at scaling up diagnostic testing to test all suspected malaria cases, treating every confirmed case with a quality assured antimalarial, and tracking every malaria case in the HMIS both at the community and health facilities.

The NMCP will also continue to strengthen IMCI training, prompt referral for danger signs, and prompt and effective treatment of severe malaria with the adoption of intravenous artesunate.

The NMCP will continue to conduct and use operational research information to improve case management implementation and carry out a drug efficacy survey. The NMCP will also continue to implement and strengthen quality assurance and quality control of malaria diagnostics and treatment both pre-shipment and in the field. Rwanda will continue to conduct the WHO drug efficacy monitoring in four sites to ensure that ACTs retain their efficacy.

Objective 3: By 2018, malaria morbidity measured by slide positivity rate will be less than 5% with six initial districts achieving this by 2016

Rwanda will continue to implement all components of the MSP in order to reduce the burden of malaria across the country to SPR <5% of fever cases as a milestone for all districts to transition to pre-elimination by the end of 2018. Rwanda will also implement a pre-elimination feasibility assessment to be conducted by the Malaria Elimination Group at the University of California San Francisco in 2014 with PMI support. These results will inform the selection of pre-elimination districts. Based on 2013 data, Rwanda tentatively identified possible pre-elimination districts as Rutsiro, Ngororero, Gicumbi, Musanze, Nyabihu and Rubavu.

During 2015 and 2016, in the selected pre-elimination districts systems will be re-oriented to support malaria pre-elimination as per the strategic interventions described in the MSP (Annex 1):

- Test all fever cases by health workers and report malaria positives within 24 hours
- Investigate all malaria cases within 48 hours of notification
- Conduct reactive case detection among investigated cases
- Conduct reactive case detection among high risk and areas where there is suspicion of ongoing transmission
- Eliminate all active foci through in-depth investigation and response.

These six districts will develop, implement and evaluate pre-elimination systems for Rwanda and provide proof of principle for malaria pre-elimination in Rwanda. Capacity developed and lessons learned will be used to inform country-wide reorientation efforts as more districts reach pre-elimination levels of malaria by 2018, in particular post the 2016 targeted mass distribution.

Rwanda is partnering with Swaziland in order to learn from their pre-elimination phase experience and is

also reviewing the model developed in Zanzibar as the Rwanda pre-elimination model starts to take shape.

Objective 4: By 2018, all health units will report timely, completely and accurately on key malariaindicators

Quality surveillance data collected at all levels of the health and community systems in Rwanda has proved a key for monitoring the country's malaria burden and trends in malaria, evaluating the impact of interventions, and responding to increases in transmission. Rwanda, therefore, needs to maintain its robust malaria surveillance system.

With a decreasing malaria burden and a transition from stable to unstable malaria transmission, the ability of districts to analyze and respond to upsurges in malaria is pivotal. Therefore, support to the NMCP to strengthen decentralized M&E capacity is a priority under this funding request.

Funds will be used to continue the NMCP's work to prioritize and build capacity in enhanced passive surveillance and in epidemic surveillance and response in order to build the foundation that Rwanda needs to achieve the ambitious goal of pre-elimination by 2018.

The NMCP is working on a 2013-2018 M&E plan which will provide the framework, strategy and indicators necessary to transition to pre-elimination status.

Finally, funding for this objective has been maintained as a priority under this RBF model funding request as, under the new model, Rwanda will be dependent on effective, timely reporting of results in order to unlock grant disbursements.

Objective 5: By 2018, effective program management and coordination will be expanded to all levels including multi-sectoral and regional partnerships

As described in CN Section 1.1d, Rwanda has an excellent track record of malaria program management, coordination and capacity building and needs to continue to resource these core management functions for continued effective malaria control. In addition, malaria pre-elimination needs a new programmatic approach supported by political, technical and financial commitment at all levels with enhanced coordination of all malaria control activities.

Malaria mapping indicates that the nine highest malaria burden districts in Rwanda are located at the borders of neighboring high-burden countries. Rwanda, considering malaria pre-elimination, needs to aim to reduce and eventually prevent importation of malaria infections across these borders. Rwanda will therefore aim to develop and implement cross-border and regional initiatives for malaria control intervention harmonization and coordination. The program will, therefore, aim to develop and strengthen collaborative and partnership initiatives to accelerate malaria control and pre-elimination in Rwanda and the region and finalize at least one cross-border agreement during the upcoming implementation period.

Building on the experience of working across sectors to implement the IVM Plan, the NMCP will aim to create a multi-sectoral malaria pre-elimination group in order to leverage all possible resources, expertise and experience in the pursuit of Rwanda's pre-elimination goal.

Given the funding landscape, the development and implementation of a resource mobilization and advocacy strategy will be a priority shared by the MOH, NMCP and all malaria partners.

Objective 6: By 2018, 95% of the population will have correct knowledge of malaria prevention and control

Rwanda's success in increasing the scale-up of interventions and in decreasing its malaria burden poses challenges to communications efforts as well as opportunities. When people are aware that malaria transmission has fallen to low levels in most districts, some become complacent, even if they live in districts with higher prevalence.

BCC may require a new strategy during this era of reduced malaria burden in many districts – and malaria pre-elimination – as it may become more difficult to capture people's attention through mass media and interpersonal communication efforts to convey the continued risk of malaria.

In the upcoming implementation period, the NMCP intends to introduce or strengthen the following communication strategies to try to ensure continued high use of malaria control interventions, specifically LLIN use, IRS, and prompt diagnosis and treatment:

- Engage local leaders to motivate and mobilize their constituents with regard to malaria control interventions
- Use *Umuganda* – community improvement day – each month to disseminate important malaria

messages

- Engage and mobilize the community through other channels such as focus group held by CHWs during household visits
- Take advantage of Rwanda's increasing emphasis on national pride by conveying the message that people should continue to adhere to malaria interventions in order for Rwanda to maintain its success in keeping malaria at low levels.

Given the projected available funding, the NMCP will however have to slash the BCC budget and will not be able to fund non-governmental organizations (NGOs) which have provided major support in community mobilization for malaria control with Global Fund resources; PMI will continue limited support to NGO partners for malaria.

Messaging through the mass media of radio and television will continue following negotiation on the part of the MOH to agree that Rwandan radio and television stations will provide free messaging.

Given the above, the NMCP with stakeholders will review the malaria advocacy, communication and social mobilization strategy.

Closing the funding gap

Hard choices forced by a challenging funding environment carry the risk of reducing the effectiveness of the Rwandan malaria control program resulting in a resurgence of malaria in the country. These risks will be outlined in CN Section 4.4 and may need to be reflected in the targets achievable under the Global Fund RBF model malaria grant.

A re-orientation for sustainability

Faced with the reality of the current global funding landscape and mindful of the need to re-orientate the program approach towards the post-2015 and sustainable development goals (SDGs) agenda, Rwanda aims to accelerate a re-orientation of key components of its malaria program under the 2015-2017 RBF grant and with other available funding in order to work towards its pre-elimination goal and a more sustainable malaria program in the future.

If Rwanda can sustain its successful malaria program, preventing resurgent cases, it will reap huge health and economic benefits. In 2011, the NMCP in collaboration with the African Leaders Malaria Alliance (ALMA) estimated the cost benefit of sustaining malaria control interventions in Rwanda. The model suggested that over the next five years, a sustained control program would avert: an estimated 38 million malaria cases; US$ 267 million in costs to the public health system of diagnosing and treating outpatient and inpatient malaria; and US$ 547 million in the household costs of malaria (out-of-pocket treatment costs and lost income due to the illness), equivalent to about 7% of household income.

As Rwanda looks ahead to the planned 2016 targeted mass distribution of LLINs and beyond, the country is aiming to put in place program elements and approaches that will help maintain coverage, expand the malaria pre-elimination map, and create maximum program efficiencies e.g. by evaluating options for augmenting traditional EPI and ANC LLIN continuous distribution systems by adding community distribution channels; by developing, implementing and evaluating a pre-elimination malaria model for Rwanda; by embedding BCC in existing community systems both health and non-health; by strengthening surveillance systems to provide the data needed to target available resources most effectively for maximum impact; and by co-opting other sectors to support and fund the fight against malaria.

3.2.d Selected indicators to be used as a basis for annual funding decisions

Under the RBF model, the country program in collaboration with all malaria stakeholders identified a small number of indicators that highlight the NMCP malaria control priorities and objectives and can be used to assess program performance on a regular basis. The list includes routine indicators that will be collected through the HMIS and household survey indicators which will be collected periodically (every two years).

Rwanda has proposed no impact indicators under the RBF model. Unlike other diseases, malaria shows major annual variations that are multi-factorial in nature (i.e. 2009 – 54.3% TPR, 2010 – 24%, 2011 – 13.1%, 2012 – 15.6%, 2013 – 29.2% TPR). However, Rwanda plans to undertake an impact assessment with WHO assistance in 2017 to measure the program impact and achievements.

Rwanda's HMIS reports timely, complete and accurate data and validated indicators are crucial as the NMCP does not use household surveys to run and improve their program.

The following indicators have been selected by the NMCP and stakeholders as a basis for this RBF model malaria grant because between them they track:

- The key drivers for reducing malaria morbidity (LLIN use) and mortality (case management)
- Vector control measures (LLINs and IRS) as the key cost drivers of the program
- Service coverage for key vulnerable groups (children < 5 years and pregnant women)
- Service delivery in public sector health facilities and at the community level
- Progress on re-orienting systems for pre-elimination in support of the goal of the MSP.

The indicators chosen are all present in the MSP. The first four indicators listed below relate to MSP Objective 1 – vector control (Strategy 4 – maintain LLIN coverage; Strategy 5 – conduct IRS). The following four indicators relate to MSP Objective 2 – case management (Strategy 1 – quality diagnosis at all levels of the health service; Strategy 2 – quality treatment at all levels of the health service). The final indicator on the list relates to MSP Objective 3 – Pre-elimination (Strategy 2 – investigate all malaria cases within 48 hours of notification).

A detailed description of each of the indicators can be found in the indicator reference sheets (attached as Annex 17).

Malaria O-1a: Proportion of population using an insecticide-treated net (slept under an insecticide-treated net the previous night)among households with at least one insecticide-treated net(disaggregated by sex)

This is a RBM household survey indicator which in principle shows progress towards universal LLIN coverage among households that own LLINs. This is a new indicator used in the 2010 DHS and 2013 MIS (baseline for concept note). LLIN use has been shown to be a major driver in reducing the malaria burden in Rwanda and consistent use should be encouraged.

Given funding availability projections, mass distribution LLINs will be prioritized to households living in high malaria burden districts. If LLIN unit price decrease and/or cost savings are garnered from other parts of the program, moderate and low burden districts willbe targeted to maintain universal LLIN coverage. This indicator will be measured once during the next three years during the 2016 MIS which is planned and funded.

Malaria O-1b: Proportion of children under five years old using an insecticide-treated net (slept under an insecticide-treated net the previous night)among households with at least one insecticide-treated net

This is a RBM household survey indicator which shows LLIN use in a vulnerable population over time. Rwanda has used this indicator in the 2005 DHS, 2007/2008 MIS, 2010 DHS, and 2013 MIS (baseline) to show significant increases in LLIN use among children <5 among households that own LLINs. LLIN use has been shown to be a major driver in reducing the malaria burden in Rwanda and consistent use should be encouraged.

Given funding availability projections, LLINs will be targeted for children attending for routine measles vaccinationand for children living in targeted high malaria burden districts during household distribution. Universal LLIN coverage is pending additional funding. This indicator will be measured once during the next three years during the 2016 MIS which is planned and funded.

Malaria O-1c: Proportion of pregnant women using an insecticide-treated net (slept under an insecticide-treated net the previous night)among households with at least one insecticide-treated net

This is a RBM household survey indicator which shows LLIN use in a vulnerable population over time. Rwanda has used this indicator in the 2005 DHS, 2007/2008 MIS, 2010 DHS, and 2013 MIS to show significant increases in LLIN use among PW among households that own LLINs. LLIN use has been shown to be a major driver in reducing the malaria burden in Rwanda and consistent use should be encouraged.

Given funding availability projections, LLINs will be targeted for primipara pregnant women attending routine ANC services and pregnant women living in targeted high malaria burden districts during household distribution. Universal LLIN coverage is pending additional funding. This indicator will be measured once during the next three years during the 2016 Malaria Indicator Survey which is planned and funded.

VC-5: Proportion of households in targeted areas that received indoor residual spraying during the reporting period

Since 2007 to date, Rwanda has conducted eleven IRS rounds and has ceased IRS operations in certain districts due to decreases in funding and in malaria incidence and transmission. Rwanda's IRS programwill

continue to target high-burden districts and sectors, to mitigate insecticide resistance andfor outbreak control based on available funds and entomological evidence. Depending on insecticide and residual efficacy data, Rwanda will spray two rounds with a carbamate and one round with an acetellic.

This is thestandard RBM indicator and this indicator will be reported annually.

CM-1a: Proportion of suspected malaria cases that receive a parasitological test at public sector health facilities (disaggregated by age <5 and 5+ and type of testing – microscopy or RDTs)

A routine case management indicator approved by RBM to measure trends in malaria testing. Health facilities in Rwanda use microscopy to confirm malaria cases. Rwanda adopted and implemented the WHO recommendation to mandate laboratory confirmation before ACT treatment in 2009. Since 2009, Rwanda has documented high rates of malaria case confirmation. Fever cases are no longer synonymous with malaria in Rwanda and health workers use the facility-IMCI (F-IMCI) algorithm to identify suspect malaria cases which are laboratory confirmed with microscopy. Since 2014, the Rwanda HMIS has been collecting numbers of fever cases and the NMCP will evaluate how suspect malaria cases correlate with confirmed malaria cases with fever. In 2012 and 2013, 40% and 47% of the confirmed malaria cases were reported from health facilities respectively. This indicator is reported monthly through the HMIS and will be reported annually.

CM-1b: Proportion of suspected malaria cases that receive a parasitological test in the community (disaggregated only <5 and RDTs)

CHWs diagnose malaria with RDTs and treat malaria at the community level only for children under five. This is a routine HMIS indicator reported monthly that is approved by RBM. This shows the efficacy of the malaria diagnosis and treatment at the community level by CHWs. Fever cases are no longer synonymous with malaria in Rwanda and community health workers use the community-IMCI (C-IMCI) algorithm to identify suspect malaria cases which are laboratory confirmed with RDTs. Since 2014, the Rwanda SIS-com has been collecting numbers of fever cases and the NMCP will evaluate how suspect malaria cases correlate with confirmed malaria cases with fever. In 2012 and 2013, 60% and 53% of the confirmed malaria cases were reported from the community respectively. This indicator is reported monthly through the SIS-COM and will be reported annually.

CM-2a: Proportion of confirmed malaria cases that received first-line antimalarial treatment according to malaria treatment guidelines at public sector health facilities (disaggregated by age <5 and 5+ and type of treatment - ACT or non ACT)

This is a quality of service indicator at the health center that is measured through a health facility survey. This is a RBM indicator. Given the changing epidemiology of malaria in Rwanda, effective malaria case management becomes important to reduce morbidity and mortality. Health facility surveys are conducted every two years and will be conducted once (2016) in the three year period. Systematic randomized cluster sampling procedures will be used based on WHO guidance[19] along with technical assistance from the National Institute of Statistics and Measure Evaluation. In 2012 and 2013, 40% and 47% of the confirmed malaria cases were reported from health facilities respectively.

CM-2b: Proportion of confirmed malaria cases that received first-line antimalarial treatment according to IMCI guidelines in the community (disaggregated by age <5 and 5+ and type of treatment - ACT or non ACT)

This is a quality of service indicator at the community that is measured through an iCCM evaluation. This is a RBM indicator. Given the changing epidemiology of malaria in Rwanda, effective malaria case management at the community level becomes important to reduce morbidity and mortality. Community Case Management surveys are conducted every two years and will be conducted once (2016) in the three year period. Systematic randomized cluster sampling procedures will be used based on WHO guidance with technical assistance from the National Institute of Statistics and Measure Evaluation. In 2012 and 2013, 60% and 53% of the confirmed malaria cases were reported from the community respectively.

CM-5: Proportion of malaria index cases at Health facilities that are investigated within 48 hours (screening and treatment of household members) in pre-elimination districts

[19] Http://whqlibdoc.who.int/publications/2003/9241545860.pdf

The malaria program started the malaria pre-elimination activities by the implementation of malaria case surveillance at community level in six districts. Inclusion of this indicator is important, given that it tracks progress on the implementation of a new strategy. This indicator is measured monthly and will be reported on annually.

4-5 PAGES SUGGESTED

3.3 Modular Template

Complete the modular template (Table3).To accompany the modular template, for both the allocation amount and the request above this amount, briefly:

a. Explain the rationale for the selection and prioritization of modules and interventions.

b. Describe the expected impact and outcomes, referring to evidence of effectiveness of the interventions being proposed. Highlight the additional gainsexpectedfrom the funding requested above the allocation amount.

Not applicable to RBF Model CN.

3-4 PAGES SUGGESTED

3.4 Focus on Key Populations and/or Highest-impact Interventions

This question is <u>not</u> applicable for low-income countries.

Describe whether the focus of the funding request meets the Global Fund's Eligibility and Counterpart Financing Policy requirements as listed below:

a. If the applicant is alower-middle-income country, describe how the funding request focuses at least 50 percent of the budget on underserved and key populations and/or highest-impact interventions.

b. If the applicant is an upper-middle-incomecountry, describe how the funding request focuses 100 percent of the budget on underserved and key populations and/or highest-impact interventions.

½ PAGE SUGGESTED

SECTION 4: IMPLEMENTATION ARRANGEMENTSAND RISK ASSESSMENT

4.1 Overview of Implementation Arrangements

Provide an overview of the proposed implementation arrangements for the funding request. In the response, describe:

a. If applicable, the reason why the proposed implementation arrangement does not reflect a dual-track financingarrangement (i.e. both government and non-government sector Principal Recipient(s).

b. If more than one Principal Recipient is nominated, how coordination will occur between Principal Recipients.

c. The type of sub-recipient management arrangements likely to be put into place and whether sub-recipients have been identified.

d. How coordination will occur between each nominated Principal Recipient and its respective sub-recipients.

e. How representatives of women's organizations, people living with the three diseases, and other key populations will actively participate in the implementation of this funding request.

a. Dual track financing

The MOH has been Principal Recipient (PR) for Global Fund grants to Rwanda since 2003. The MOH has consistently performed well in its PR role; the maximum grant performance of the MOH since 2003 up to this date is A1 and the minimum is B1. Given the high level of integration of the malaria control program in Rwanda into national systems and structures, the MOH is considered best placed to implement the overall planning, coordination and program management roles of the PR. As Rwanda is now piloting the Global Fund's new RBF model, the CCM was strongly of the opinion that the MOH with its experience and strong, proven systems should continue as sole PR.

b. Not applicable

c. Sub-Recipient arrangements

Table 5 below summarizes the grant sub-recipients (SR) and the main roles and responsibilities of each SR.An implementation map outlining SR management arrangements is attached as Annex 18.

More detail on the selection and management of SRs under this grant can be found in CN Section 4.3.

Table 5: SR management arrangements

SR	Already identified (Yes/No)	Main roles and responsibilities
The Malaria and Other Parasitic Diseases Division (National Malaria Control Program)	yes	The Malaria and Other Parasitic Diseases Division (National Malaria Control Program) at National level is the custodian of the Rwanda Malaria control Strategic Plan in terms of Policy direction, resource mobilization and allocation to implementing levels and partners as well as reporting on Program Performance. The Malaria & OPDD spearheads policy, national guidelines Standard operating Procedures and manuals development, as well as guiding and overseeing as well as coordinating technical and programmaticimplementation of malaria control activities. It is also responsible for monitoring malaria disease trends and malaria control interventions implementation, resource mobilization and partnership coordination.
All District Hospitals	yes	it oversee all malaria control activities in the district and reports to the Central Level. This level coordinates and supervises all malaria activities planned and implemented by all stakeholders in the district.
All Health centers	yes	This is the primary health care implementing malaria diagnostic and treatment as Malaria is integrated in health care services and is answerable to the DH. Supervision and coordination of Community Health Workers and Local leaders. CHWs are responsible for overseeing programme implementation at community level in

		conjunction with the health facility staff. The CHWs members are voluntary workers and are not salaried staff, although they currently get some monetary incentives from the GoR, Global Fund and USAID/PMI.
SPIU	yes	SPIU is the institution under the PR-Rwanda MoH coordinating and overseeing financial implementation of all SRs
MPDD	yes	The only central procurement and medical store of the MoH which ensures procurement, storage and equitable distribution of malaria commodities countrywide

d. Coordination between the PR and SRs

Planning and implementation

The MOH through the NMCP is responsible for the planning and implementation of malaria activities and will be the primary coordinator and implementer of the MSP. Specific responsibilities will includebuildingthe capacities of those involved in the implementation to ensure the quality of services provided both for prevention and treatment of malaria. The NMCP will ensure a regular review of the program activities to ensure realization of the malaria goals.

Partnership

The NMCP will ensure that all stakeholders are on board and complement each with their respective comparative advantages according the Rwanda MSP and priority interventions. Partners will include departments in relevant ministries such as the Ministry of Local Administration (MINALOC), MINIAGRI and the Ministry of Education(MINEDUC), development partners, research institutions, community-based organizations and NGOs as well as the Army and Police forces. Links will be further strengthened to ensure joint implementation, monitoring and evaluation of malaria interventions.

Coordination

The MOH as PR will organize quarterly coordination meetings for all SRs. SRs will provide quartelyprogress reports to the MOH and the MOH will use these reports for program management purposes and provide feedback to SRs on their reports.

The NMCP will also organize quarterly coordination meetings to review performance progress on technical implementation and results, challenges, opportunities and lessons learned.

e. Role of women's organizations, people living with malaria and other key populations in grant implementation

Rwanda has prioritized gender equality and actually leads sub-Saharan Africa with women employed in government positions. The NMCP will collaborate with women's organizations i.e. community health worker cooperatives, midwife cooperatives, and private sector cooperatives to engage their communities and relay the importance of malaria prevention and control. Synergies between these groups will be explored to maximize impact and minimize costs. In addition to LLIns distributed to pregnant women, the Mal & OPDD will work with the community health desk through ASM to sensitise all women in reproductive age and detect malaria for prompt treatment among pregnant women.

1-2 PAGES SUGGESTED

4.2 Ensuring Implementation Efficiencies

Complete this question only if the Country Coordinating Mechanism (CCM) is overseeing other Global Fund grants.

Describe how the funding requested links to existing Global Fund grants or other funding requests being submitted by the CCM.

In particular, from a program management perspective, explain how this request complements (and does not duplicate) any human resources, training, monitoring and evaluation, and supervision activities.

	Malaria	TB	HIV	Comments
Human resources	The number of staffs planned to be paid under the RBC/MSP Plan of Action (POA) will be in the RBC, the Single Project Implementation Unit (SPIU) and some staffs in district hospitals. These are different positions from those planned under the TB and HIV grants	188 staffs planned and paid in the SSF TB grant POA. These staff members are located in the TB Division, NGOs and Ministries. Some district hospital have the Focal Points in their POA	4,216 staff members are paid under the SSF HIV/NSP for all SRs (NGOs, other Ministries, RBC, MOH and district hospitals and health centers). This grant also covers staff members in district hospitals and health centers	For HR, each staff member is paid and budgeted under one grant. There is no duplication but a complementary effect because one staff member will work on the three projects while paid by one source of funds Accountant and procurement staff paid with other GF projects and other parters will support activities of malaria activities
Trainings	No training activities planned in this RBF/MSP for Global Fund support.	Training of health providers on e-TB system development Training of health providers on e-TB system development Training on multi-drug resistant TB management	Training of CHWs on family planning and reproductive health for people living with HIV Train sex workers in peer education, covering HIV and STIs, violence, life skills and referral for HIV testing and STI	However in this RBF/MSP, there is no training. The NMCP will aim to integrate malaria updates into planned TB and HIV trainings where relevant to participants
M&E / supervision activities	Enhance decentralized surveillance to generate timely, high-quality, and individual-based data to track, analyze, and respond to malaria trends to support malaria pre-elimination activities Epidemic surveillance and response (ESR) –	Quality assurance for microscopy; number slides screened Annual evaluation meeting for M&E (47 hospitals and 30 districts) and focal points. Reading and interpretation of chest X-rays rom high risk group (e.g.	Evaluation / supervision of health centre PBF indicators, Support to NCC for the coordination and implementation of the orphans and vulnerable children program Conduct integrated quarterly data validation of RBC key indicators for	The NMCP will aim to integrate malaria supervisions into planned TB and HIV supervisions where relevant to supervised staff members

	continue to strengthen the ESR system by developing new epidemic thresholds and developing standardized operating protocols Document increases in malaria indicators, reductions in malaria burden both in terms of entomologic and epidemiologic parameters, and measure outcome and impact through surveys	prisons, schools) by medical specialists	HIV, TB and malaria - per diem Evaluation of the impact of community PBF on CHW cooperatives	

Further detail on the role of the SPIU in managing this grant can be found in CN Section 4.3.

1 PAGE SUGGESTED

4.3 Minimum Standards for Principal Recipientsand Program Delivery

Complete this table for each nominated Principal Recipient. For more information on minimum standards, please refer to the concept note instructions.

PR1 Name	**Ministry of Health**	**Sector**	**Health**
Does this Principal Recipient currently manage a Global Fund grant(s) for this disease component or a cross-cutting health system strengthening grant(s)?		√Yes ☐No	
Minimum Standards		**CCM assessment**	
1. The Principal Recipient demonstrates effective management structures and planning	The MOH has been Principal Recipient (PR) for the Global Fund since 2003 and celebrated the 10th anniversary of this partnership in January 2013. The PR structure has been changed from a Project Management Unit (PMU) which was managing the only Global Fund financial support to the Single Project Implementation Unit (SPIU/MOH) which is now managing all external budgets. The maximum grant performance of the MOH since 2003 up to this date is A1 and the minimum is B1. The creation of SPIU/MOH was a government decision which took place in February 2011 when the principle to establish a single entity in each budget entity to ensure the overall coordination of project costing, budgeting, implementation, monitoring and evaluation was adopted. Following the decision, and since March 2011, SPIU-MOH was established, through a Ministerial Instruction No 20/52 of 10/03/2011. The procedures manual was thereafter elaborated and approved by the General Senior Management Meeting of the MOH on 4August 2011. In March 2014 , the Government of Rwanda organized 11th National Leadership Retreat whose theme was " Accountable Governance". Among 43 resolutions (see GOR web site), there are , 14th resolution recommending "To assess the challenges hindering timely implementation of various government projects and adopt remedial actions for addressing those challenges" while Resolution 22 recommended "To expedite the		

restructuring of public institutions for efficient

and effective delivery by March 2014". During that Retreat , Ministries were going to focus on the development of policies , related strategies and ensure comprehensive oversight of their implementation through specific agencies and other institutions. Ministries should no longer being involved in operational matters as this should be the first task of their respective agencies. It is I that context that MOH-SPIU will be starting July 2014 integrated in RBC structure under direct supervision of the Principal deputy DG of RBC who is the chief budget Manager of RBC. The current mission, key functions , structure and term of references of its staff are not changing as such . Some adjustments are going to done and integrated within the revised version of RBC SPIU Procedure Manual. The completion and the approval of this procedure manual will occur during the first quarter of 2014-2015 fiscal year.

The Minecofin will play a key role for the implementation of RBF applied to the MSP through bellow described Key systems :

The Budgeting process leading to MTEF

- ✓ The Ministry of Finance and Economic Planning issues two budget call circulars every year. *The first* circular provides guidance to Government institutions in the preparation of the annual budget and medium term expenditure framework (MTEF) in accordance with article 28 of the law on state finances and property No 37/2006. The Ministerial instructions No 005/2010 on budget calendar gives the standard activities and their corresponding timeframe, which have to be done by each stakeholder during budget process. The second circular determines the , annual ceiling budget that is communicated to each Budget entity.

  The MOH and its affiliated agencies (RBC, CHUs, NDERA, KACYIRU) and the earmarked health budget to districts as far as health sector is concerned receive their corresponding ceilings. The MOH takes the lead of the budgeting process within its all tied budget agencies in order to ensure efficient & equitable allocation of funds (SWOT analysis applied to all key components of the health strategic plan including the HSS in order to identify actual relevant health interventions in need of allocation of funds) across health programs as per defined and agreed health priorities from wide consultations with local and external stakeholders of the Health sector (Social health cluster meetings .

  Furthermore MOH ensures that funds are secured for other financial commitments such as counter fund promise with MOH external partners. The budget process cycle ends with the development of Medium term expenditure (MTEF) showing allocated budget per program for 3 years where it appears GOR and Partners budget per year and per program. The annual budget is voted by the parliament before 30 june

- ✓ The process of Transfer of funds to Budget entities and agencies : From the approved quarterly budget of MOH as budget entity , a portion is transferred at monthly basis by Minecofin for paying operational cost related to short training , mission fees , running cost etc while Salaries are directly transferred per MOH request to staff bank account . Funds budgeted for health Investments are kept in treasury account and paid directly to suppliers upon MOH

request.

RBC is a budget agency having in its side Malaria Program , Medical Product & Production and SPIU as most key implementers of MSP. RBC receives at quarterly basis approved budget from Minecofin . It comprises salaries , running cost and funds for health investment. GOR counterpart for MSP is also part of RBC and MOH-Earmarked health budget to district comprising among others salaries for civil servants of health facilities .

- ✓ **The Process review of Internal audit reports** submitted by Head of Internal audit Unit of Budget entities and agencies to the chief government auditor at Minecofin **:**The Chief Government Auditor's office consolidates all reports from Budget Agencies and inform the Minister the burning recommendations which considered to be the alarming and need his/her guidance. They also consolidate audit recommendations status and further own the responsibility to urgently follow up its implementation.

  Note: The Chief Government Auditor's office, in order to enhance further its public audit over seeing function they have decided to create an independent deliberation audit committee which shall basically provide advisory services and provide the broad pictures of the audit status and the way forward and the committee, shall comprise of PS/ ST MINECOFIN, DG RPPA, Chief Government Auditor among others and this is in progress. RBC SPIU will proactively consult audit committees report and internal audit reports of budget entities and agencies sub recipients of MSP op plan for purpose information and monitoring of the implementation of audit recommendations

- ✓ <u>The Process review</u> of financial and other reports from Budget agencies & entities :

1.The Public Accounts Unit under Accountant General Directorate/MINECOFIN verifies the accuracy of all reports submitted by all the Budget Agencies and their conformity with norms and accounting policies and provide feedback to the reporting agency.

The financial statement comprises :

1. The statement of financial position, 2. Statement of Revenue and Expenditure, 3.Notes to the financial statements, budget execution report, Accounting policies and disclosures such as progress on follow up of Audit recommendation. These are backed up with ,Bank Reconciliation, statements, the Trial Balance, General ledger and petty cash certificate..

Note: all the above reports are generated and submitted on monthly basis.

2. The Public Accounts Unit tracks also whether all Budget Agencies have respect the cash replacement- Cash balance relations and provide feedback to the Agencies.

3. Public Account Unit office also consolidates the annuals report for the

	Minister for approval and provides copies to the PM office and the Auditor General's office. 4. Considering that some transfers of funds will transit by RBC SPIU before reaching non budget entities , RBC SPIU will gather and assess financial reports from those SRs and will consolidate financial reports of the entire MSP Operational plan taking in account financial statements reports submitted to MINECOFIN by budget entities. .
2. The Principal Recipient has the capacity and systems for effective management and oversight of sub-recipients (and relevant sub-sub-recipients)	**Process for the identification and selection of SRs**: The mechanism for the identification and selection of SRs is guided by mutual understanding between the MOH and Global Fund. This responsibility has been delegated to the CCM but under the grant agreement, the PR is responsible for selecting appropriate SRs, assessing their capacities to implement the program activities designated to them. The prospective SRs are identified during the elaboration of the project in order to allow them to provide their inputs. Once the successful negotiation of funds are completed and a grant agreement signed between the PR and the Global Fund, all project documents are thereafter entrusted to the SPIU to coordinate project implementation, to provide technical assistance to implementing entities and to ensure regular interaction with development partners, and establish Memorandum of Understanding (MOU) with SR with conditions and modalities for financing and then a plan of action and a budget proposal submitted by the SR. The related MOU on use of project funds is signed before the beginning implementation of project activities and is very clear about: 1. The PR and SR obligations 2. The use of saved and uncommitted project funds, 3. The suspension and termination of partnership, and 4. The Definitive Termination of Partnership. In order to have a common understanding of project objectives and expected results, the PR through the SPIU, elaborates an operational plan in collaboration with the selected SRs, organizes orientation meetings on the new project focusing on the programmatic, financial and administrative and procurement procedures. **Monitoring and evaluation**: The PR through the SPIU, has elaborated and disseminated to the SRs data reporting tools, supervision tools and feedback formats that facilitate the collection of accurate and reliable and standardized data. In its role of ensuring oversight of grant implementation at the SR level, facilitating effective and timely program implementation and resource management by SRs, the PR has recruited a pool of program managers, program officers, a budget controller and specialist accountants who are monitoring day to day the project implementation and inform the PR on the progress, the main challenges and proposed reprogramming/budget reallocation if necessary. According to the MOU signed, all SRs are required to submit to the SPIU a programmatic and financial quarterly report indicating the way and level they are performing the project implementation and at the same time submit a request of funds for the next quarter. SPIU/MOH analyzes these reports and provides a formal feedback and transfer of funds. Once a quarter, the SPIU presents to the CCM a cumulative budget execution and progress.

	Since 2003, the PR has successful managed for HIV, TB and malaria 43 districts hospitals, many public institutions implementing health activities, 101 NGOs from CSOs working in the country, including community based organizations (CBOs) and faith based organizations (FBOs).
3. The internal control system of the Principal Recipient is effective to prevent and detect misuse or fraud	In order to prevent and detect funds misuse or fraud, the PR has put in place a pool of internal auditors who are responsibilities to develop and implement a comprehensive plan of audit depending on the structure and mission of different institutions as SRs of multilateral and bilateral projects; to strengthen SR capacity building in collaboration with the Department of Finance and Administration; to conduct a regular follow up of the implementation of audit recommendations, and to facilitate external audits when necessary. Internal auditors based at SPIU/MOH are working in complementarity with external auditors and ensuring their recommendations are well implemented by the SR. The SPIU Procedures Manual defines principal measures to be taken for a SR suspected for misusing or fraud of project funds: based on an audit report by the internal audit of the SPIU, external auditor, and investigation report by an authorized entity, and in order to protect project funds, a Provisional Suspension Letter (PSL) with clear date of effectiveness, reasons, duration and recommendations is sent by the Coordinator of the SPIU to the suspected SR, with copy to the Minister of Health and Permanent Secretary of the MOH. At the end of the Provisional Suspension Term, the internal auditors of the SPIU shall conduct a thorough audit to ascertain the progress made by the concerned SR to address issues reported and to implement SPIU recommendations. If the audit and assessment made at the end of the Provisional Suspension Term suggest a satisfactory level in improvement and addressing the issues, the SPIU officially sends to the SR a Partnership Resumption Letter with copy to the Minister of Health, Permanent Secretary of the MOH, and other authorized entities. The Definitive Termination of Partnership Letter with clear effectiveness date and reasons shall be officially sent to the SR by the Permanent Secretary of the MOH with copy to the Minister of Health, concerned POM, SPIU, and other authorized entities. The SR has the right to react to and appeal for every matter leading to a provisional suspension or definitive termination of partnership. Other control system in place are: ▪ Office of the Ombudsman – ensures transparency, fight corruption and fraud ▪ Office of General Prosecutor – monitors implementation of audit findings (Office of the Auditor General report to the parliament) and do follow up of mismanagement reported ▪ Parliamentary Public Fund Committee - oversees the implementation of audit findings, audit recommendations and any reported mismanagement.
4. The financial management system of the Principal Recipient is effective and accurate	In the RBF model, the flow of funds starts with the Ministry of Finance and Economic Planning. However, since 2003, the PR which is the MOH through SPIU, is in charge of coordinating all administrative and financial activities and totally involved in planning of the implementation and reporting process. The financial and administrative unit under the SPIU Coordinator ensures that policies and decisions on financial matters are well implemented. This unit has been strengthened by the recruitment of a qualified staff, accountants and budget controllers who are in charge of: 1. Monitoring the implementation of budgets of various projects

	2. Accounting supervision in case of necessity 3. Verification and approval of financial statements 4. Monitor the external audit and implement its financial recommendations 5. Analyze internal audit report and ensure the implementation of its financial recommendations 6. Ensure coordination between the project and various partners in the areas covered by the components 7. Establish a system of supervision of staff performance and management 8. Development of policies for staff training and development 9. Planning for training and seminars for staff to be submitted to the Coordinating Committee for approval 10. Develop a template of an evaluation or ranking format to ensure its use 11. Monitor the database for the management of staff recruited and paid from funds of the SPIU. Coordinate and supervise short-term consultants and supervise the administrative management.
5. Central warehousing and regional warehouse have capacity, and are aligned with good storage practices to ensure adequate condition, integrity and security of health products	Law no. 54/2010 of 25 January 2011 established the RBC and determined its mission, organization and functioning provisions; among others, to put at the disposal of all people of Rwanda drugs and medical equipment and to provide highly classified medical expertise. The RBC's MPPD has been put in place purposely for the achievement of the above mission. The PR has been using the MPPD for procurement, storage and distribution of pharmaceuticals and other health related products from the central level to district level. Warehouse capacity and stock management system. Currently, MPPD has seven storage sites. Currently, RBC/MPPD has finished its phase 1 warehouse extension project which will increase its storage capacity. Since most of these warehouses are rented, RBC/MPPD is in the process of closing three of them in order to reduce the renting cost. Since March 2014, an e-LMIS has been implemented where customers (mainly district pharmacies) are sending their orders through the system which is directly interfaced by SAGE LINES 500. This will improve the communication between RBC/MPPD and its customers and will reduce significantly the time for requisition and order processing because requisitions arrive at the central level at real time. In addition, it will improve the quality of data and increase the quality of the quantification and forecasting since the system allows transactions to be traced in both directions: ordering and distribution. The e-LMIS is also used to connect the district pharmacies to all health facilities within their specific catchment areas to improve the communication and quality of data at the peripheral level. The e-LMIS will strengthen health products management by improving supply chain processes and optimizing forecasting and supply planning for all pharmaceutical and laboratory commodities The Rwanda Ministry of Health (MOH) is focused on strengthening the, supply chain management of health commodities across all levels of the Rwanda health system by providing the population with quality, timely and cost efficient maintenance, modernization, technical and logistics support. The eLMIS provides an effective and sustainable supply chain system for drugs and other commodities for the Rwanda supply chain. The eLMIS rationalizes drug storage points, facilitates usage of transport as efficiently as possible, reduces theft and fraud and provides information for

	forecasting needs. The system is an ERP, configured to meet the needs of Rwanda Supply Chain Systems and has been incrementally implemented to the central facilities (LMO), central warehouse (MPPD), District Pharmacies, National and Referral Hospitals. It is currently being rolled out to all lower level Service Delivery Points in Rwanda. The system is designed to improve supply chain and logistics reporting; reduce order preparation and execution cycle time; improve order fill rates; decrease LOE spent on logistics and inventory management; provide real-time management information; ensure management by visibility within the value chain; improve wastages and expiry management; provide realistic information for supply planning and quantification and improve tracking and accountability for community case management commodities. The eLMIS will provide a rich source of information for the effective management of the supply chain. The eLMIS will aggregate and disseminate supply chain and logistics data in the form of information needed by the users to support their daily operations of business and provide information for decision-making and increase in the overall effectiveness and efficiency operational improvement. The eLMIS will collect data from all facilities that will help in effective supply chain management resulting into significant improvement in both logistics and supply chain planning. Data will be captured in real time and will include consumption data at the point of delivery, purchase and distribution of commodities from both public and private sector, real time inventory data within the pipeline and individual sites, and supply and replenishment planning data. The data will be utilized to inform and improve: Product Distribution Accuracy; Supply planning and quantification; Forecast Accuracy; Reduction of supply planning costs; Order preparation and execution cycle time; Order Fill Rate; Consumption Reporting; Inventory Management including Visibility at Levels; Inventory accuracy rate; Stock out reporting rate and accuracy; Inventory holding/warehousing costs; Requisition Accuracy; Level of Effort utilized to manage inventory; Value of unusable stock; Expiry management accuracy; Total transportation cost; Report usage and accuracy rate. Additionally the data will be used to support business intelligence analytics critical in informing the Ministry on quantification and supply planning. Relationship with HMIS and SISCOM The eLMIS will utilize data from HMIS to support quantification and supply planning. It will leverage morbidity and patient data to identify prevalence rates and support scenario creation in supply planning. Actual consumption data from the eLMIS will be compared to malaria cases/prevalence (HMIS) and SIS-COM to validate the supply planning and forecast of malaria commodities. It will also enhance the MOH's ability to use information from the supply chain pipeline to improve quantification/forecasting, budgeting, inventory control, storage and distribution from health to central level facilities In terms of staffing, the MPPD has more than 120 personnel, 42 in the warehousing and distribution department. The warehousing and distribution activities are handled by a qualified staff including two directors of warehousing and sales and distribution units, three operational managers, and 37 permanent routine staff. This team is supported directly by the IT and

	the quality assurance team over all the operations. In addition RBC/MPPD contract the offloading and loading activities.
6. The distribution systems and transportation arrangements are efficient to ensure continued and secured supply of health products to end users to avoid treatment/program disruptions	The MPPD conducts active distribution to 30 district pharmacies. There is a monthly distribution schedule from the central level to the district pharmacies. RBC/MPPD contracts private transporters to carry out this activity from the central level to district pharmacy warehouses every month based on need. Then, the 30 district pharmacies distribute to health facilities within their specific catchment area (hospitals and health centers) based on the district monthly schedule. Each district pharmacy has its own truck for distribution activities. For LLINs, the distribution is currently done directly from central level to health facilities without passing through district pharmacies because of the high volume of LLINs. As mentioned above, MPPD is currently piloting the use of e-LMIS and in waiting for its full functionality, also uses the Excel pro forma system. The procurement of Global Fund-approved health products is conducted in respect of RPPA, which is a MINECOFIN affiliated agency, overseeing the implementation of existing public procurement laws and public procurement policies issued by the cabinet. The PR submits an annual procurement plan, a monthly procurement report, request of non-objection and request of clarifications. It ensures: archiving of procurement documents in electronic format and hard copy; monitors the performance of contracts following the specific requirements of each tender in collaboration with the contract manager and legal advisor; organizes committees for the receipt of goods, works and services, and ensures that goods and services received comply with specifications of tenders; takes necessary measures to ensure that goods and services are delivered and stored safely in accordance with provisions of tenders; coordinates the heads of sections of works & goods and services in the preparation of quarterly reports on the situation of contracts financed by multilateral and bilateral projects.
7. Data-collection capacity and tools are in place to monitor program performance	**As coordinator of malaria control interventions in Rwanda, The NMCP is coordinating programmatic data to assess the program performance. Programmatic data collection capacity and tools**: The main data are collected through the Rwanda HMIS from SIS-COM to the health facility. The HMISaggregates and integrates data from the community and to the integrationofRwandaTRACnet Is being currently developed. The data on impact and outcome indicators is collected by the National Institute of Statistics of Rwanda provided through the DHS and Health Facility Survey with WHO support, and the MIS with International Macro support. The PR uses data from the Food Security and Vulnerability and Nutrition Analysis Survey, General Population and Housing Census, Multiple Indicator Cluster Surveys (MICS), National Child Labor Survey, Service Provision Assessment survey and operational research, such as bioassay survey, clinical audit, onsite data verification, assessment. Results information sharing and reporting. **Financial data collection capacity and tools. The Ministry of Finance reporting tool and the** Rwanda Health Financing Databases (MoH financial report, Health Resource Tracker, Clinical PBF, Community PBF, CBHI), from community level to the specific central level database, will be used alongsidenational quarterly, semester and annually disease reports.
8. A functional routine reporting system with reasonable coverage is in place to report program	The PR health data flow is very well organized from community level (CHW) to central level with aggregation of data at health center, district level and central level. The HMIS/SISCOM is the main source of clinical and financial data. The PR is also uses data from surveys (including DHS, MIS, Health Facility

performance timely and accurately	Surveys) conducted by specialized institutions. All SRs provide a narrative quarterly report and the PR provides a semester and annual report to the Global Fund. The PR is piloting a rapid SMS reporting system.
9. Implementers have capacity to comply with quality requirements and to monitor product quality throughout the in-country supply chain	The MPPD is the entity that ensures the quality of pharmaceuticals and health products at the central and decentralized levels. MPPD collects samples at the entry point, stores and sends them to the WHO qualified laboratory for quality verification. Recently, the Global Fund agreed with the PR to extend the sampling at the decentralized level. The PR through the Global Fund/Malaria Project (R5) has been equipped with HPLC machine to assess the quality of malaria drugs using samples taken at health facilities and community level.

4.4 Current or Anticipated Risks to Program Delivery and Principal Recipient(s) Performance

a. With reference to the portfolio analysis, describe any major risks in the country and implementation environment that might negatively affect the performance of the proposed interventions including external risks, Principal Recipientand key implementers' capacity, and past and current performance issues.

b. Describe the proposed risk-mitigation measures(including technical assistance) included in the funding request.

4.4 Risk analysis and mitigation plan

The funding landscape

Rwanda recognizes that the resources required for the pre-elimination of malaria over the next five years may not be available. The current MSP is costed at287 million for Rwanda to achieve near zero malaria deaths and pre-elimination by 2018. However total available funding by all current donors for the upcoming 3-year implementation period 2015-2017 is roughly 37% of the total need at US$106.26 million. Therefore, the NMCP with other stakeholders dramatically revised their three-year operational plan slashing their budget to align with projected available funding. Risks, with possible reversals in the progress that Rwanda has achieved in malaria control, abound from these financial constraints and history provides many examples.

Thus, in order to mitigate against any adverse effects the GOR will seek to diversify the funding base and also ensure efficiencies. The GOR will reach out and mobilize resources beyond the traditional partners. These will include the private and corporate sector. Among these will be partners in the telecommunications sector, agriculture and multinationals working in Rwanda. It is expected that some of these partners will support the GOR efforts in malaria control as part of their corporate social responsibility programs.

In addition, the NMCP will explore the possibility of employee-based support schemes in the provision of LLINS and implementation of IRS as appropriate. The MOH will work with the CBHI and PBF initiatives to enhance support to malaria specific care and activities.

The GOR is already implementing an integrated health package. Efforts will be made to ensure efficiencies and cost savings throughout the health care sector such as integrated supervision and training.

A diversified funding base will be essential in ensuring sustainability. To mobilize internal and external resources, the NMCP with partners will develop and implement a resource mobilization and advocacy strategy. The strategy will articulate the needs, gaps and support required in order to sustain the gains made in malaria control and reach pre-elimination by 2018.

Funding gaps for high priority malaria control interventions

IRS – pyrethroid resistance

IRS has been conducted in Rwanda since 2007 covering up to seven high burden districts. Pyrethroid resistance was documented in Rwanda in 2010 after insecticide resistance testing by the NMCP. In response to this finding, the NMCP developed and implemented an IRM plan which focuses on reducing pyrethroid

insecticide resistance to conserve the efficacy of the LLINs by using targeted IRS.

Rwanda transitioned to a carbamate insecticide in 2014 in three high burden districts and switched from blanket spraying to targeting discrete high incidence sectors due to financial constraints as insecticide cost increased significantly (six-fold). The NMCP monitors the efficacy and impact of IRS operations and will continue to use evidence to target where IRS will be the most effective.

Rwanda will also continue to monitor insecticide resistance which historically for carbamates emerges rapidly and will eventually have to transition to a long-lasting organophosphate which costs 15 times as much as a pyrethroid.

Possible mitigation strategies to maintain IRS operations in Rwanda over the next three years could include:

- With increasing costs and decreasing resources, continue to emphasize the use of epidemiological and entomological data to target IRS most effectively in terms of high incidence sectors or even catchment areas of specific health centers while also ensuring efficacy and impact as there will be a minimum number of structures that need to be sprayed to provide the community effect that reduces the malaria burden
- Focus on finding efficiencies and cost savings in IRS operations. Different donors have different strengths and weaknesses in terms of their support i.e. insecticide may be bought in a bulk procurement from a donor that conducts IRS operations throughout its portfolio thereby reducing the cost per unit whereas another donor could use local system to provide logistic support, warehousing, and payment of seasonal staff.

LLINs

Achievement of universal coverage and mass LLIN campaigns has shown a dramatic impact over time on reducing the malaria burden in Rwanda. HMIS shows significant decreases following mass campaigns and upsurges when campaigns are delayed. Rwanda has also shown that LLINs are lasting around two years in the field and efforts are being made to prolong this duration both through discussions with manufacturers and efforts in the community for LLIN care and repair.

Rwanda would like to maintain universal coverage that was achieved in 2010 by distributing around seven million LLINs in 2016. However, given available funding and prioritization, Rwanda will only be able to procure 4.9 million LLINs or around 63% of the total need.

It is also important to highlight that Rwanda has documented high net use in DHS/MIS which increased significantly over time (2013 MIS 74% in children <5 and pregnant women). However, not having a net is the largest burden to net use and future MIS/DHS might show reductions in this coverage due to financial constraints in net procurement. Possible mitigation strategies to try to conserve the impact of universal coverage over the next three years could include:

- Prioritize LLIN distribution and high coverage in high burden districts. The NMCP used 2013 HMIS confirmed malaria cases to prioritize 19 high burden districts for LLIN distribution in 2016 which account for 96% of the malaria burden and will protect 63% of the population (Table 00). If additional resources become available, the NMCP will prioritize re-achieving universal coverage;
- Explore possibilities of maintaining universal coverage through continuous distribution channels. Mass campaigns are expensive and logistically challenging. Rwanda has a robust routine distribution to ANC and EPI and will explore other channels where LLINs may be distributed over time. A possibility which Rwanda is exploring is community-based distribution using CHWs. CHWs provide major support to mass campaigns through quantifications, quarterly LLIN checks and mobilization. CHWs could provide continuous LLIN distribution in their catchment area which would be much more efficient than mass distributions every three years. Partners will work with the NMCP to develop, implement, and assess other distribution channels in order to ensure effective LLIN coverage.

BCC

Rwanda has changed behavior over the years with robust BCC strategies and programs. Given the available funding, the NMCP will have to slash the BCC budget and not fund NGOs which have provided major support in community mobilization for malaria control. Possible mitigation strategies to try to ensure high use of malaria control interventions in the context of possible reduced perception of risk with declining malaria burden over the next three years could include:

- Engage local leaders to motivate and mobilize their constituents in regards to malaria control

interventions

- Use Umuganda – community improvement day – each month, to disseminate important malaria messages
- Engage and mobilize the community through other channels such as group discussions held by CHWs during household visits.

Potential for increased malaria deaths

With reduced resources and reduced malaria burden, severe malaria and malaria deaths have been shown to increase before decreasing with waning immunity. A dynamic, evolving intervention program will therefore be necessary to secure substantial, stable reductions in malaria transmission.

Sub-standard malaria commodities

Sub-standard malaria drugs plague malaria control efforts internationally with over 30% of all ACTs deemed sub-standard. Generic ACTs from India and China are now flooding the market and, although WHO deems the products approved, field testing is revealing a very different story; 30% of ACTs randomly tested in a recent global study were found to be counterfeit.

The NMCP and malaria stakeholders will continue to prioritize pre-arrival and field testing in order to ensure quality ACTs and RDTs for the population.

Rwanda gains in malaria control have also been compromised by sub-standard malaria commodities. HMIS data shows dramatic declines in confirmed malaria cases with the mass distribution of LLINs. However, this historical trend was confounded in 2012/2013 when the NMCP distributed over three million LLINs and during the following months, malaria burden increased rather than decreased.

Investigation of the LLINs in question showed a premature loss in bioactive insecticide and subsequent loss in bioassay efficacy.

The NMCP had planned to respond by replacing these LLINs in the high burden districts. However, financial constraints will mean that this replacement will not go ahead leaving a large number of people with nets that offer partial protection.

Shorter LLIN durability in Rwanda than claimed by manufacturers

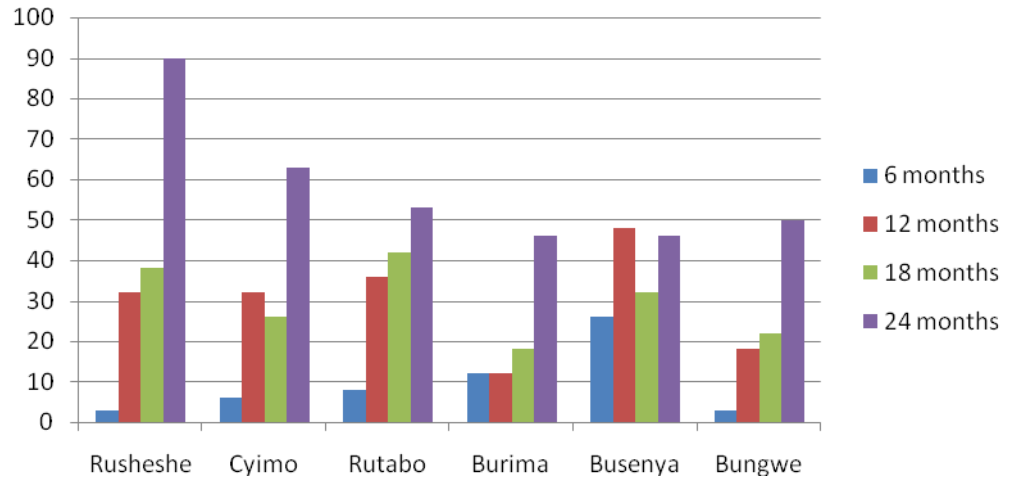
The NMCP carried out a longitudinal three-year LLIN study 2010-2013 to gather field information about LLIN durability and insecticide decay rates as part of the development of the IVM Plan. Field results showed that LLINs do not last the 3-5 years that the manufacturers suggest in Rwanda (Figure6); instead, more than half the LLINs in the study failed by 24 months due to holes[20]. The insecticide remains stable above 80% until 24 months, though, with considerable regional variation. The study highlights the need for enhanced net care and repair and the possibility for mass universal LLIN replacement campaigns every two years, which would have significant financial impact.

Given these results, there will be on-going efforts for BCC to promote net care and repair and the need to keep nets in good condition so that malaria prevention through LLIN use is sustained.The NMCP will educate CHWs on measuring holes and replacing LLINs that fail (as possible, given limited numbers of nets).

PMI, who supported the NMCP in the final year of the study, are discussing the implications of two versus three year net replacement at the international level with donors.

Figure 6:Trends in LLIN percent failure (proportionate hole index >768=net failure) per site at 6, 12, 18, and 24 months, Rwanda

[20]Hakizimana, E. *et al*. Monitoring Long-Lasting Insecticidal (mosquito) Net Durability to Validate Net Serviceable Life Assumptions, Rwanda.*Malaria Journal* (submitted April, 2014).



Procurement delays

Rwanda has experienced procurement delays on Global Fund LLIN and ACT. Rwanda will ensure that conservative estimates of lead time are used for all orders and will coordinate closely with PMI whose more flexible procurement systems can provide emergency cover if it becomes necessary.

Leakage of LLINs

In 2012-2013, Global Fund LLINs procured for Rwanda were found in Burundi. The NMCP forwarded the details to the Rwanda National Police who are working with Interpol and the investigation is ongoing. In order to mitigate leakage, the NMCP removes the LLIN from the plastic packaging for environmental reasons and also to ensure that LLINs are not diverted.

Cross-border issues

Rwanda is surrounded by malaria endemic neighbors and malaria burden maps highlight that Rwanda will always struggle with malaria control in districts that border malarious neighbors.

The nine highest burden malaria districts in Rwanda are located next to Uganda, Tanzania and Burundi where multitudes of people cross the border daily. Human movements contribute to the transmission of malaria on spatial scales that exceed the limits of mosquito dispersal. Identifying the sources and sinks of imported infections due to human travel and locating high-risk sites of parasite importation could greatly improve the malaria control program.

Rwanda has acknowledged this challenge and has enhanced its surveillance to designate where malaria cases originate. However, progress requires resources for malaria control harmonization at the regional level and cross border collaboration.

Climate change

Studies are showing that climate change in regard to warming temperatures is making once malaria-free zones hospitable to the disease. Temperature is the major factor in the development of the sporozoite in the malaria life cycle in the mosquito. Increasing temperatures correlate with increased malaria transmission. Ethiopia has documented malaria at altitudes that were once considered refractory to the disease and in the Kenyan highlands increasing temperatures are exacerbating malaria epidemics with increases in case fatality.

Like other parts of East Africa, Rwanda has certain districts with low malaria due to their altitudes. However, Rwanda can show through annual malaria maps (incidence, morbidity, mortality, and test positivity rate) how malaria is encroaching on these historically malaria free zones.

People in these districts have no acquired immunity to malaria and like in Ethiopia and the Kenyanhighlands increases in malaria in these zones could result in dire consequences.

Financial constraints will mean that Rwanda will be unable to maintain universal coverage with LLINs in 12 lower burden districts in the 2016 mass LLIN distribution adding to the risk.

The NMCP is working with stakeholders to enhance surveillance and respond in a timely and effective manner to malaria outbreaks. However, resources will be a limiting factor.

1-2 PAGES SUGGESTED

CORE TABLES, CCM ELIGIBILITY AND ENDORSEMENT OF THE CONCEPT NOTE

Before submitting the concept note, ensure that all the core tables, CCM eligibility and endorsement of the concept note shown below have been filled in using the online grant management platform or, in exceptional cases, attached to the application using the offline templates provided. These documents can only be submitted by email if the applicant receives Secretariat permission to do so.

- √ Table 1: Financial Gap Analysis and Counterpart FinancingTable
- √ Table 2: Programmatic Gap Table(s)
- √ Table 3: Modular Template
- √ Table 4: List of Abbreviations and Annexes
- √ CCM Eligibility Requirements
- √ CCM Endorsement of Concept Note