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Strategy Development: Landscape Analysis - Malaria

PRELIMINARY VERSION: 29 MAY 2020

Revisions forthcoming to incorporate technical input from partners



SDGs and Malaria

Goal 3. Ensure healthy lives and promote well-being for all at all ages



Target 3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Indicator 3.3.3: Malaria incidence per 1000 population

Global Technical Strategy for Malaria 2016-2030

Pillar 1

Ensure universal access to malaria prevention, diagnosis and treatment

Pillar 2

Accelerate efforts towards elimination and attainment of malaria-free status

Pillar 3

Transform malaria surveillance into a core intervention

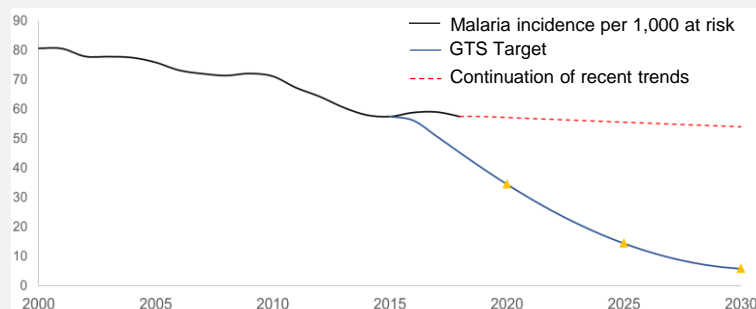
Supporting Element 1: Harnessing innovation and expanding research

Supporting Element 2: Strengthening the enabling environment

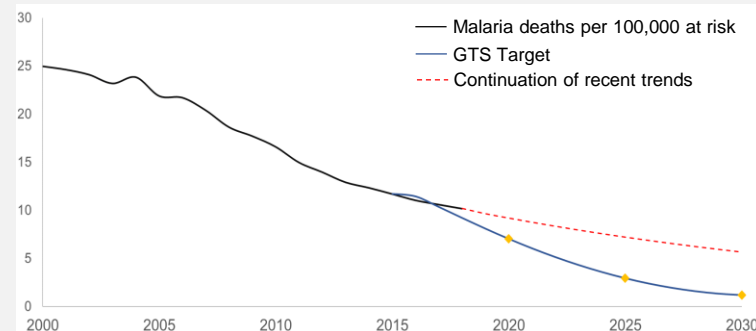
Key messages

- Globally, there has been progress in malaria burden and mortality reduction due to expanded coverage of effective interventions and increased resources.
- However, we are currently off track to meet 2030 Global Technical Strategy (GTS) morbidity and mortality targets.
- Malaria is particularly concentrated in low-income countries, where domestic resources are lower.
- The future of malaria control is critically impacted by external factors, including population growth, migration, poverty, inequity, complex emergencies and climate change, combined with weak health systems and biological threats, such as insecticide and drug resistance.
- Reduction in effective intervention coverage carries a high risk of rebounds and epidemics.
- Investment in core epidemiological and entomological capacity in countries - critical to identifying needs and deploying interventions.
- Acceleration of progress will require optimization of strategies and innovations both in delivery of available interventions and in new tools and approaches, as well as increased financial investment.

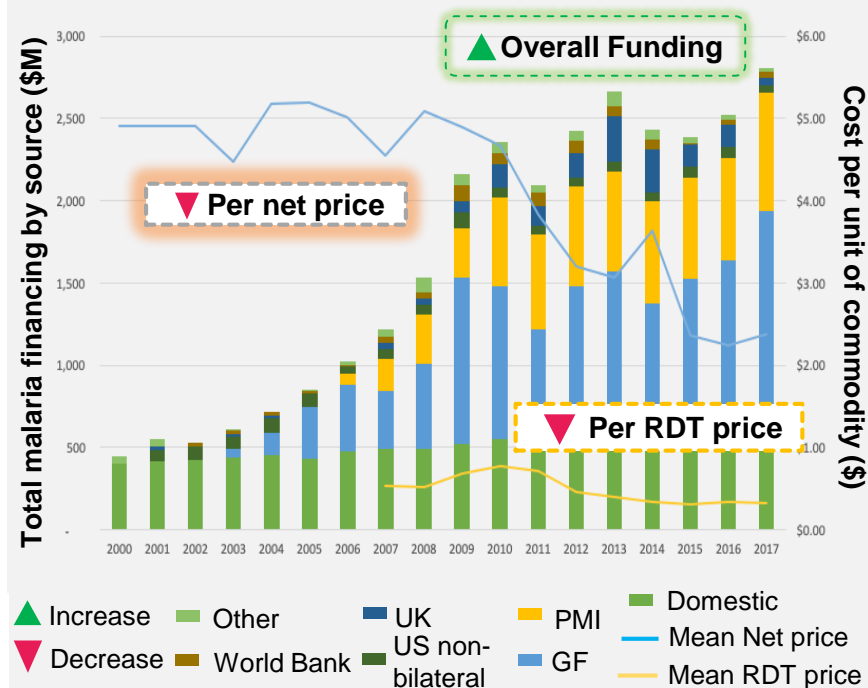
Incidence per 1,000 population at risk (all countries)



Mortality rate per 100,000 population at risk (all countries)



Malaria funding landscape, 2000-2017

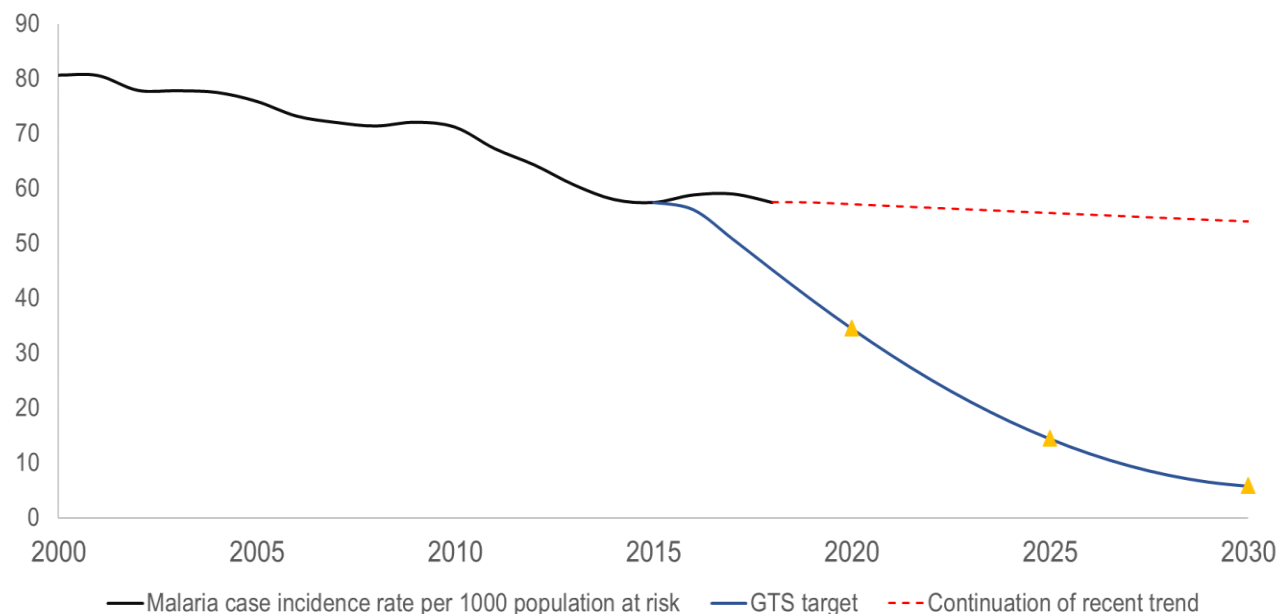


Global Technical Strategy (2016-2030) targets

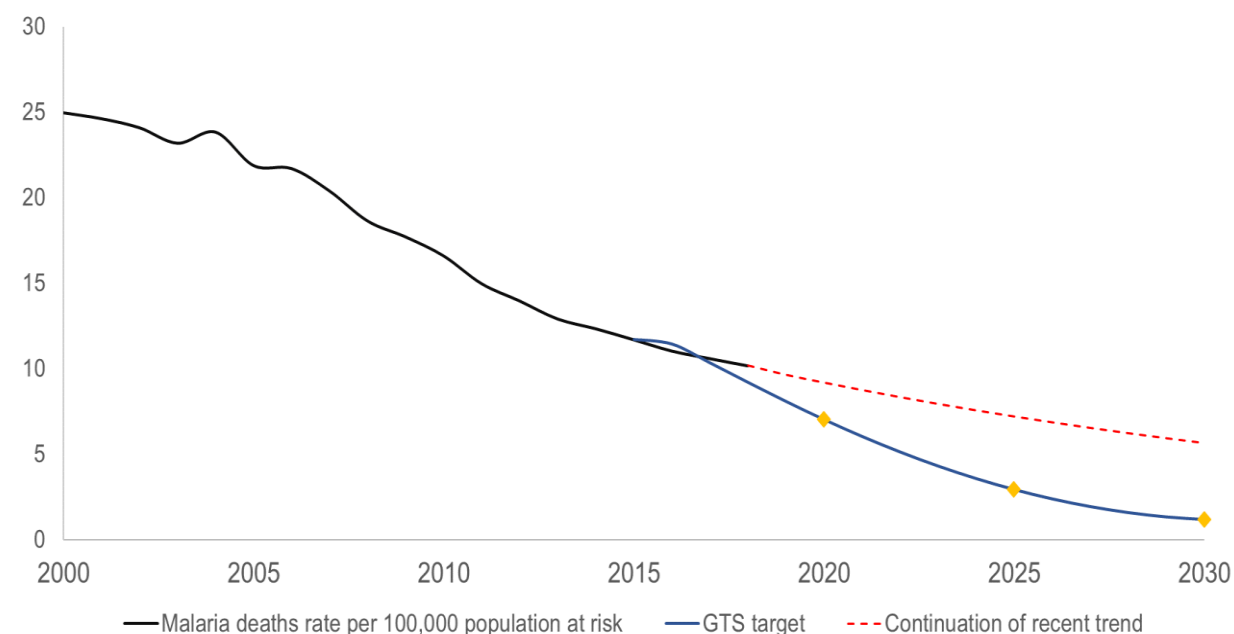
Goals	Milestones		Targets
	2020	2025	2030
1. Reduce malaria mortality rates globally compared with 2015	At least 40%	At least 75%	At least 90%
2. Reduce malaria case incidence globally compared with 2015	At least 40%	At least 75%	At least 90%
3. Eliminate malaria from countries in which malaria was transmitted in 2015	At least 10 countries	At least 20 countries	At least 35 countries
4. Prevent re-establishment of malaria in all countries that are malaria free	Re-establishment prevented	Re-establishment prevented	Re-establishment prevented

Significant reduction in malaria burden achieved between 2010–2018; but incidence reduction has levelled off since 2015, *likely* off-track for critical 2030 global targets

Malaria case incidence per 1,000 population at risk (**all countries**)



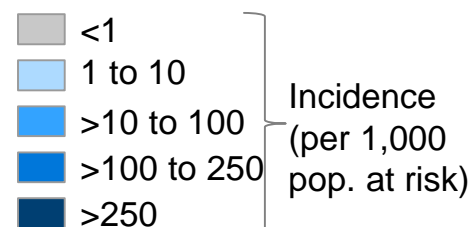
Malaria case mortality rate per 100,000 population at risk (**all countries**)



Distribution of malaria burden in 2018; overall burden concentrated in Sub-Saharan Africa, *P. vivax* more common in the Americas and Asia & the Pacific

Malaria endemic countries

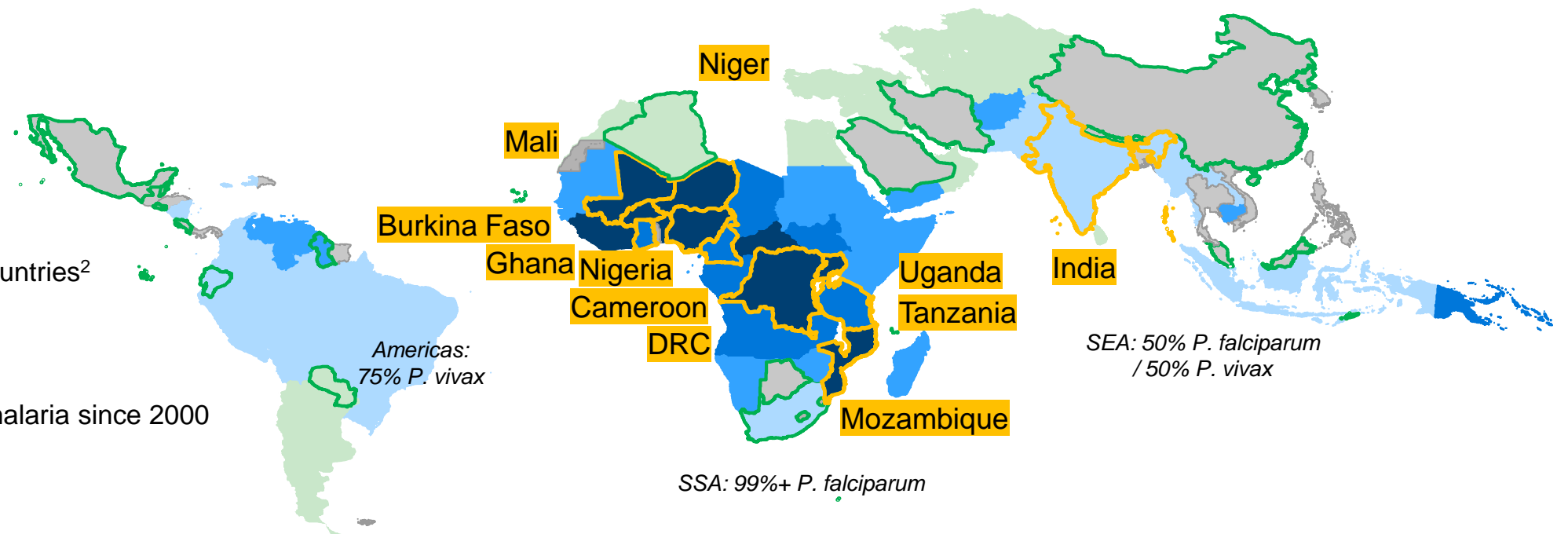
Eliminating countries¹



High burden high impact countries² (HBHI)

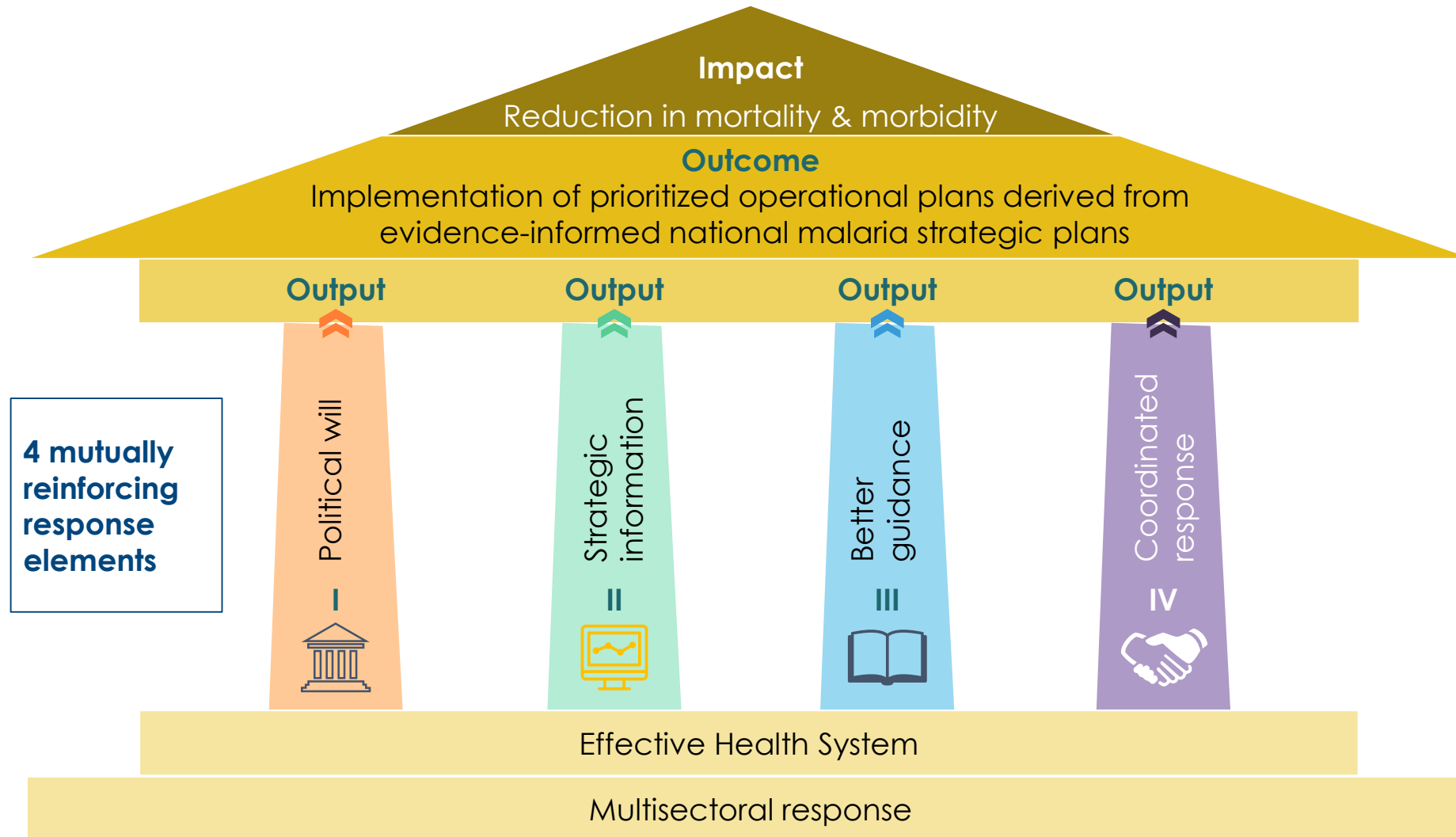
Malaria free countries

- No Malaria
- Countries that eliminated malaria since 2000

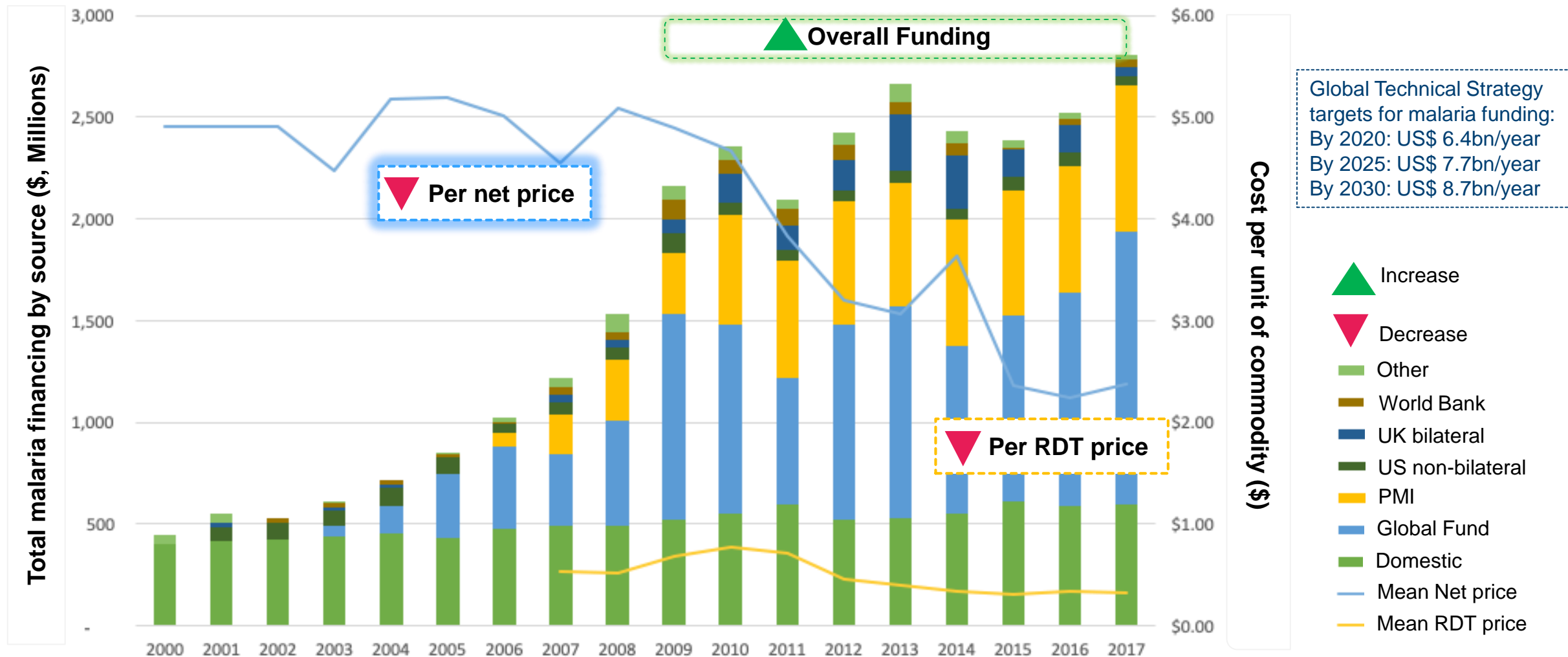


70% of case and death burden concentrated in eleven High Burden High Impact countries; A pronounced decrease in malaria is needed in these countries to get back on track to meet the GTS milestones, prompting the country-led, partner supported HBHI approach.

HBHI is a holistic approach, with the 4 elements feeding into tangible actions through National Strategic Plan (NSP) implementation and concrete outcomes



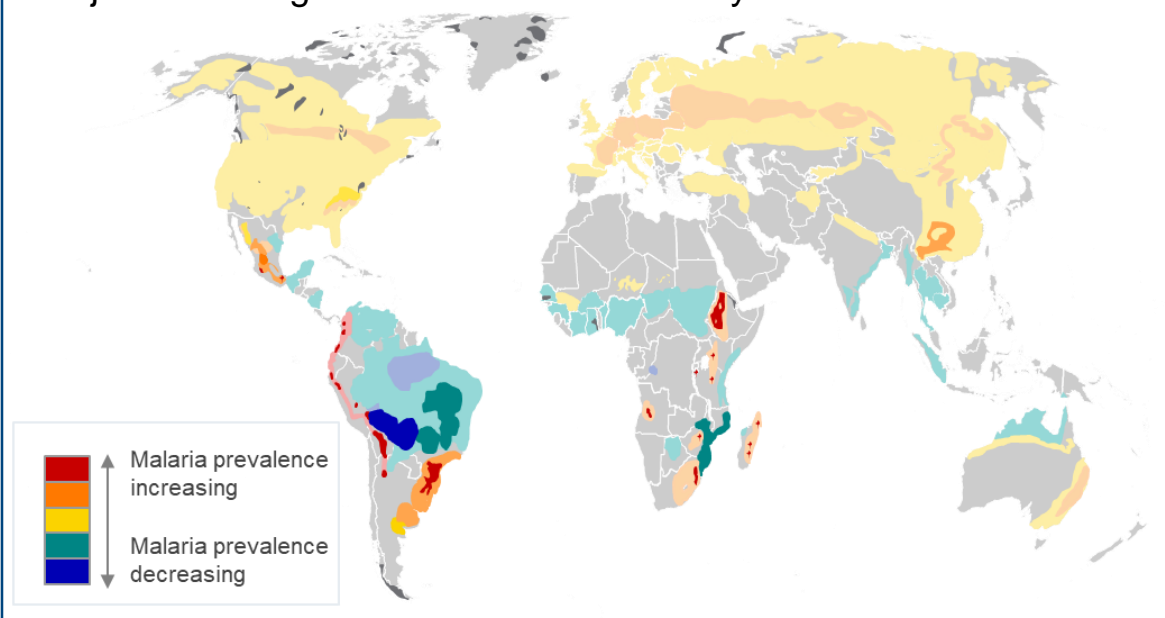
What catalyzed the reduction in malaria burden and can this be sustained?



Significant scale-up of malaria interventions has driven progress, facilitated by the double impact of increased funding and decreased commodity prices; but these trends have now plateaued. New tools may lead to price increases in the future.

External threats: climate change, complex emergencies, political instability

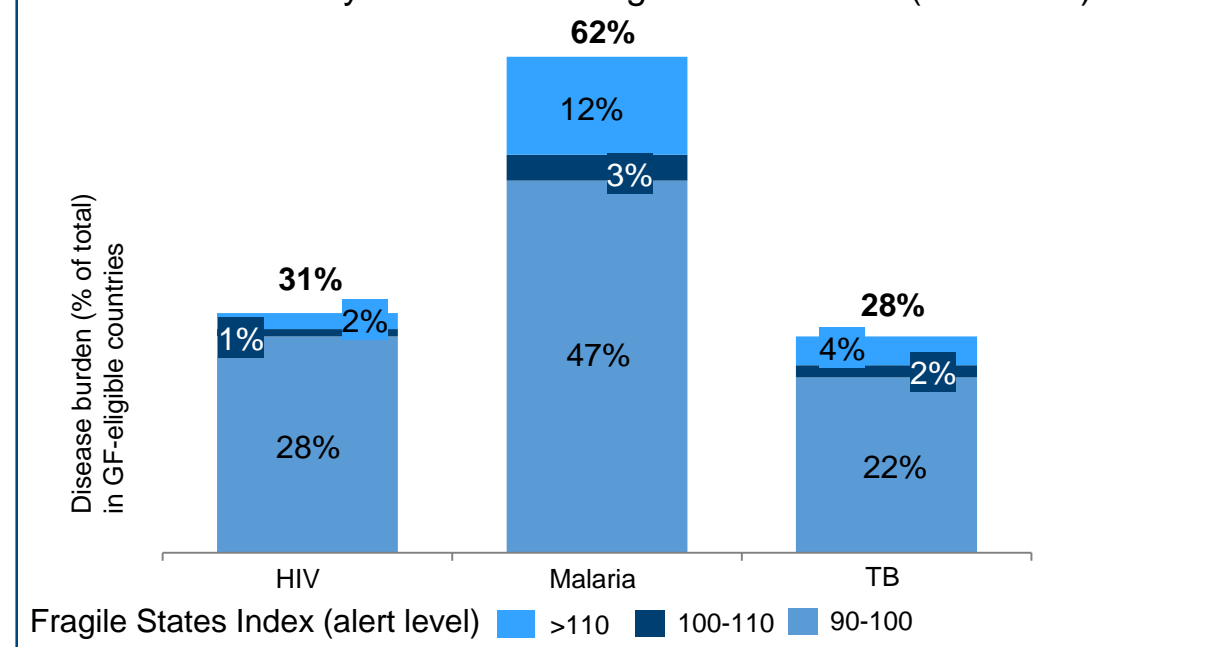
Projected Change in Malaria Prevalence by 2080¹



- Climate change causes increasing global temperatures, extreme weather events, and change in rainy seasons.
- Malaria burden predicted to arise in contexts that previously did not have malaria (with low population immunity) and may decrease or disappear in tropical endemic regions.

- 73% of Emergency Fund allocated to malaria this cycle – 55% of these funds used to respond to extreme weather events.
- Nearly two thirds of malaria burden is in fragile states, compared to one third for HIV and TB.

Disease burden² by disease and fragile States index (alert level) 2019

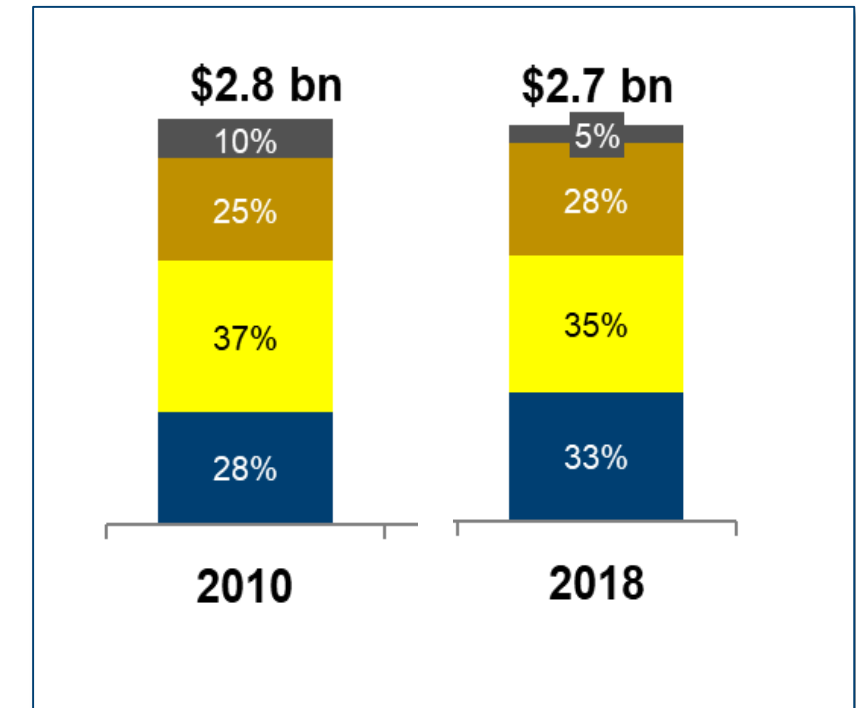


The future of malaria control is critically impacted by a number of external threats, including climate change, complex emergencies and political instability. Dips in intervention coverage can rapidly lead to resurgence.

External Threats: growing populations, increased costs of newer technologies and stagnant resources

- **Growing need:** Low-income & Low-middle income population growth is rapid and expected to **increase by ~0.6- 0.8 bn people** by 2030.
- **Resource gap:** Financial gap for Global Technical Strategy is large; WHO estimates **\$6.5 billion needed in 2020 alone**.
 - Increased prices of newer technologies contribute to the gap.
- **Donor financing stagnant:** Limited increase in absolute funding between 2017-2019.
- **Domestic financing:** Malaria spending in low and lower-middle income countries improving but not sufficient to meet demands of the response. Malaria is particularly concentrated in low-income countries, which have fewer domestic resources. Shocks to the global economy may have a disproportionate impact on lower-income countries' fiscal capacity for health, and malaria spending.

Total financing for malaria, by funder (2010 & 2018)



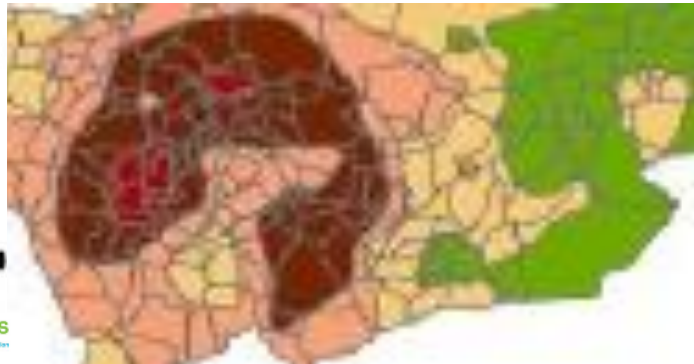
■ International funders ■ USA bilateral ■ Global Fund ■ Governments of endemic countries

Maintaining and expanding coverage for larger populations and higher costs of new technologies will require increased financing from multiple sources.

Vector Control Challenges: barriers to achieving effective coverage - LLIN example

Challenges to achieving access and usage targets are myriad:

- How to target improvements in access and use on a granular level?
- What are the acceptable costs to optimize access?
- What is the right strategy for urban areas/lower risk and lower net use areas?
- What are the right strategies for identifying and addressing barriers associated with gender, age, socioeconomic status, and legal status?



VECTORWORKS
Scaling Up Vector Control for Malaria Prevention

Additional barriers: Population estimates, sleeping spaces and household size impact quantification and effective coverage.

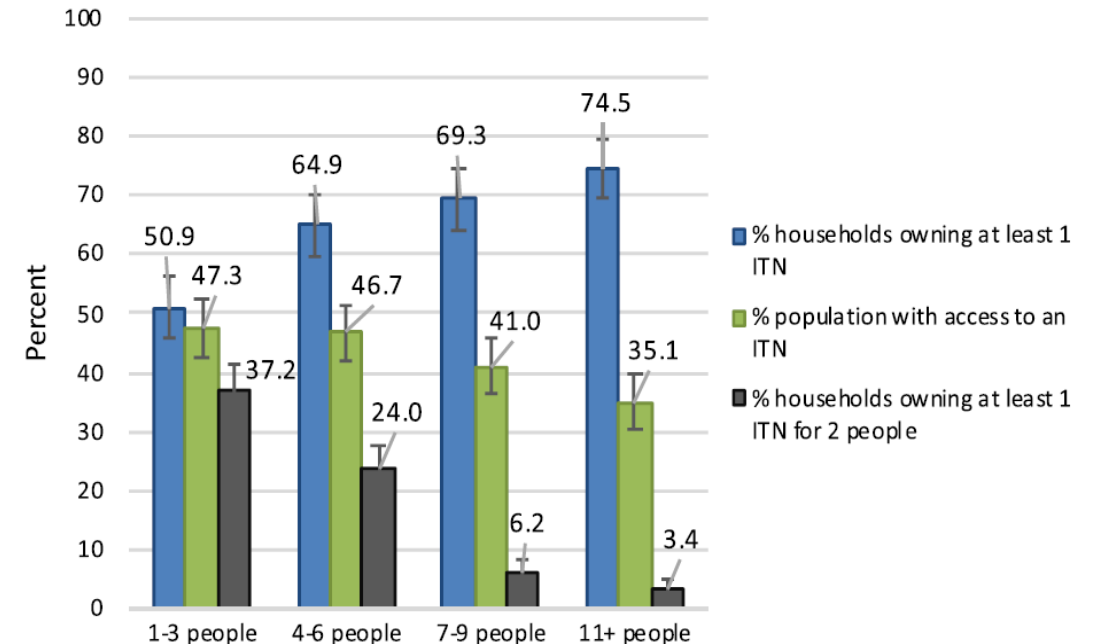
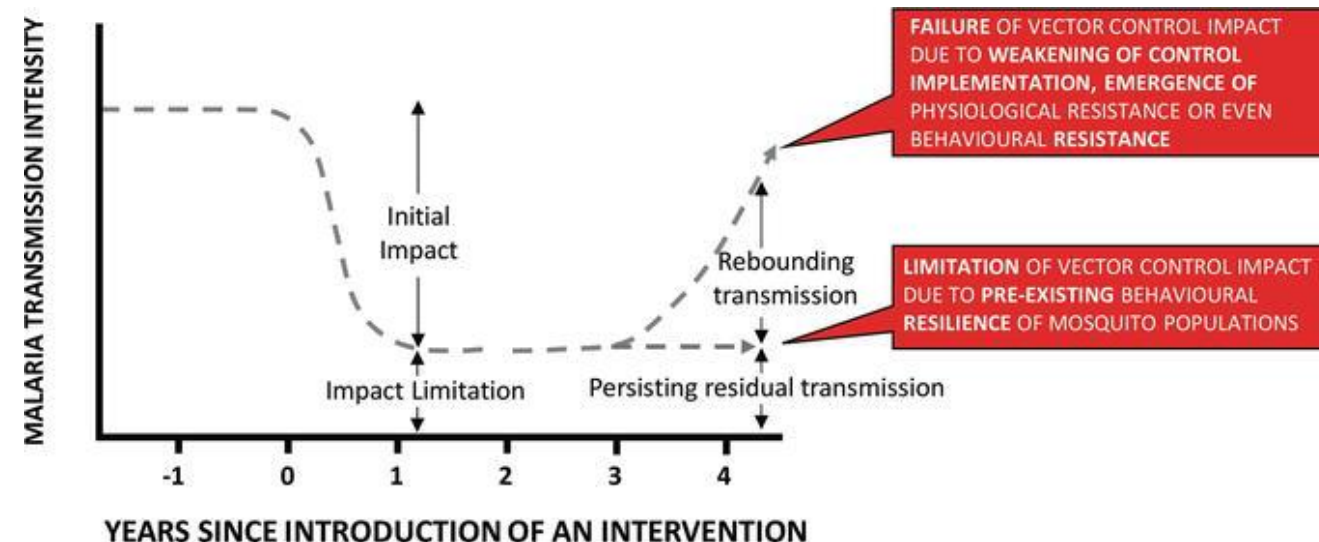


Fig. 4 Mean ITN coverage for the three ITN coverage indicators for households of varying sizes, across 59 household surveys (2010–2016)

Exploring tailored delivery approaches based on local context to improve coverage and usage of interventions to maximize impact.

Biological threats to Vector Control

Stylization of how insecticide resistance and residual transmission can limit intervention impact. Source: Kiileen et al., 2018



Insecticide resistance (IR)

- 90% (73) of reporting countries have a main vector with resistance to ≥ 1 of the 4 main insecticide classes.
- Role of IR in stalling of progress is debated, but the Global Fund and many partners consider proactive steps to combat IR to be critical.
- Scale-up of PBO and dual active ingredient nets: important but still limited by product availability, price and (for dual ai nets) evidence base.

Residual transmission

- Nets and IRS are highly effective at reducing malaria transmission by predominantly attacking night biting and indoor biting/resting vectors.
- Even at optimal performance of our main tools residual transmission will remain - from outdoor and/or early evening/dawn biting vectors.
- Tools that would combat residual transmission are in development, including attractive toxic sugar baits, spatial repellents and gene drive.

Overlapping needs

- New tools: from evidence building and piloting to large-scale deployment.
- Investment in core epidemiological and entomological capacity in countries is critical to identify needs and deploy interventions.

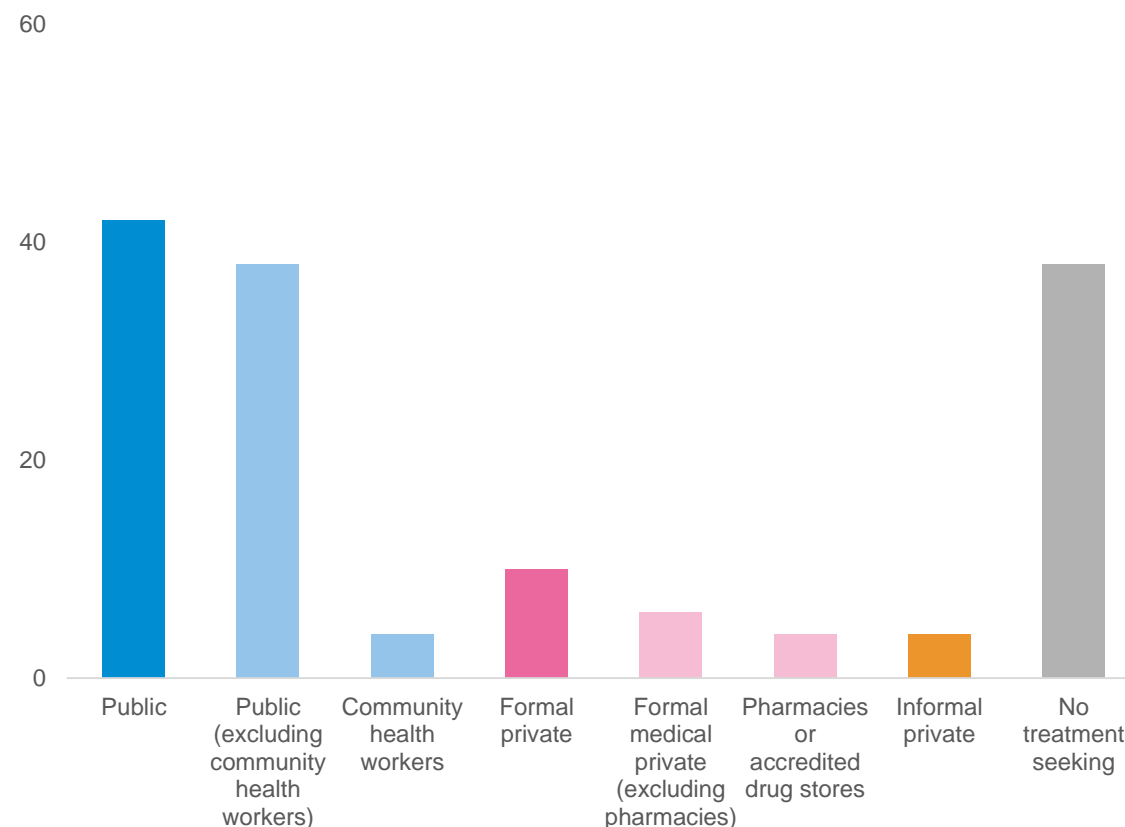
Global Fund should play critical role in facilitating rapid scale-up of new tools, building capacity for entomologic surveillance, and incentivizing implementation of policies to address insecticide resistance and residual transmission.

Case management Challenges: expanding access to quality early diagnosis & treatment

Multi-faceted issues to address:

- Variation in care-seeking behavior across countries
- Progress in expansion of testing and treatment within the public sector, but how to assess and improve quality?
- Growing private sector share in delivering malaria care which is not regulated or reported
- Still nearly 40% of children with fever in Sub-Saharan Africa do not access care
- Human rights and gender-related barriers to access
- Extensive barriers to diagnosis and treatment for those affected by conflict and natural disasters (i.e. IDPs, refugees, people living/working in remote areas)
- Expansion of community approach to access under 5s with Integrated Community Case Management (iCCM) but consistent challenges with availability of non-malaria commodities, limiting potential for greater impact on under 5 morbidity and mortality
- Need for consolidated data points from supply chain, M&E, RSSH to define the context-specific strategies that consider access & outcomes

Median % of febrile children brought for care, by health sector, Sub-Saharan Africa, 2015-2018 (latest survey)



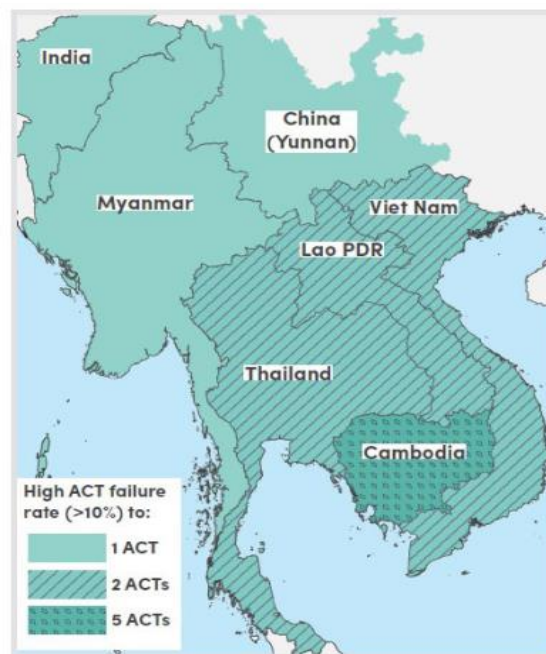
Opportunity to extend and optimize the reach and quality of public sector and community services, and potentially link with non-malaria iCCM commodities. Need to improve access to quality malaria diagnosis and care where large populations seek services in the private sector.

Biological threats to effective case management

Drug resistance

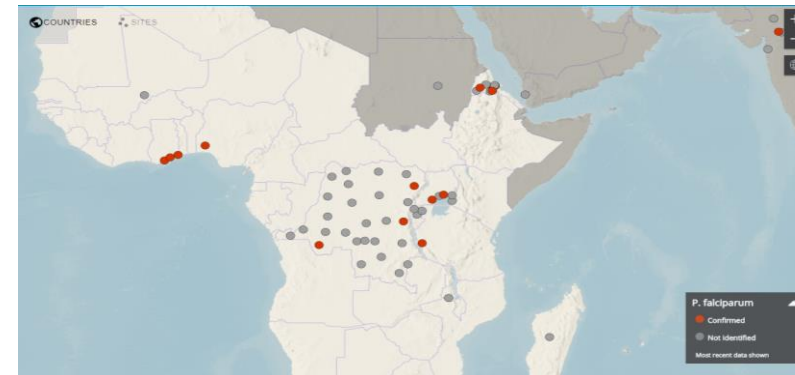
- Artemisinin resistance is widespread in the Greater Mekong Subregion, and has also been detected at a significant prevalence (>5%) in Guyana, Papua New Guinea and Rwanda.
- Effective **surveillance systems** support **early detection** of changes in drug efficacy and enable rapid action to **mitigate** the impact of resistance and **prevent** its spread.

Numbers of ACTs failing in the Greater Mekong Sub-region



Source: WHO Status Report, Artemisinin and artemisinin-based combination therapy resistance, April 2017.

Diagnostic efficacy



Pfhrp2/3 gene deletion distribution.

Source: WHO Global Plan for Insecticide resistance monitoring 2018

- The **HRP2** antigen is the predominant target of the 412 *million P. falciparum*-detecting malaria RDTs sold annually.
- Parasites that no longer express the HRP2 gene lead to false negative RDT tests.
- 28 countries** reported HRP2 deletions in 2018. In Eritrea the prevalence of dual *pfhrp2* and *pfhrp3* deletions among symptomatic patients reached 80%, requiring a shift in diagnostic strategy.

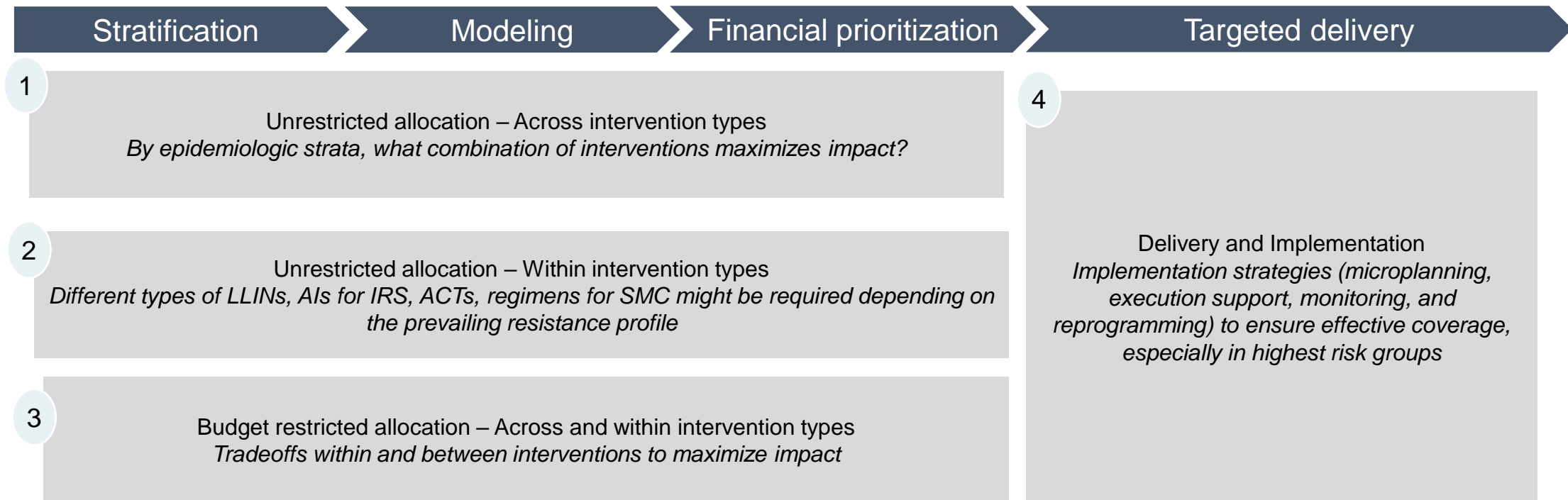
Parasite adaptation to resist antimalarial drugs and evade detection by common diagnostic tests is a threat to the global malaria response requiring a pipeline of novel drugs and diagnostics and expanded focus on elimination.

Maximizing impact: enhancing generation and use of strategic information

Strengthen surveillance as a core intervention targeting:

- Availability of quality triangulated data for existing metrics
- Development of new metrics & systems to capture micro dynamics in access, quality, utilization & impact

Utilize existing & new data at local level, including qualitative data strategies such as Malaria Matchbox; evoke sequential prioritization to choose the optimal suite of tools in the right places



Investments in timely availability, quality and use of data can improve impact and cost-effectiveness.

Maximizing Impact: leveraging RSSH investments to achieve and sustain malaria control & elimination

Addressing capacity & governance needs to design & monitor sophisticated programs:

- Improve management capacity to deliver key services and interventions where they are needed most
 - At national level and also in the context of decentralization
- Investment in core epidemiological and entomological HR capacity in countries - critical to identifying needs and deploying interventions

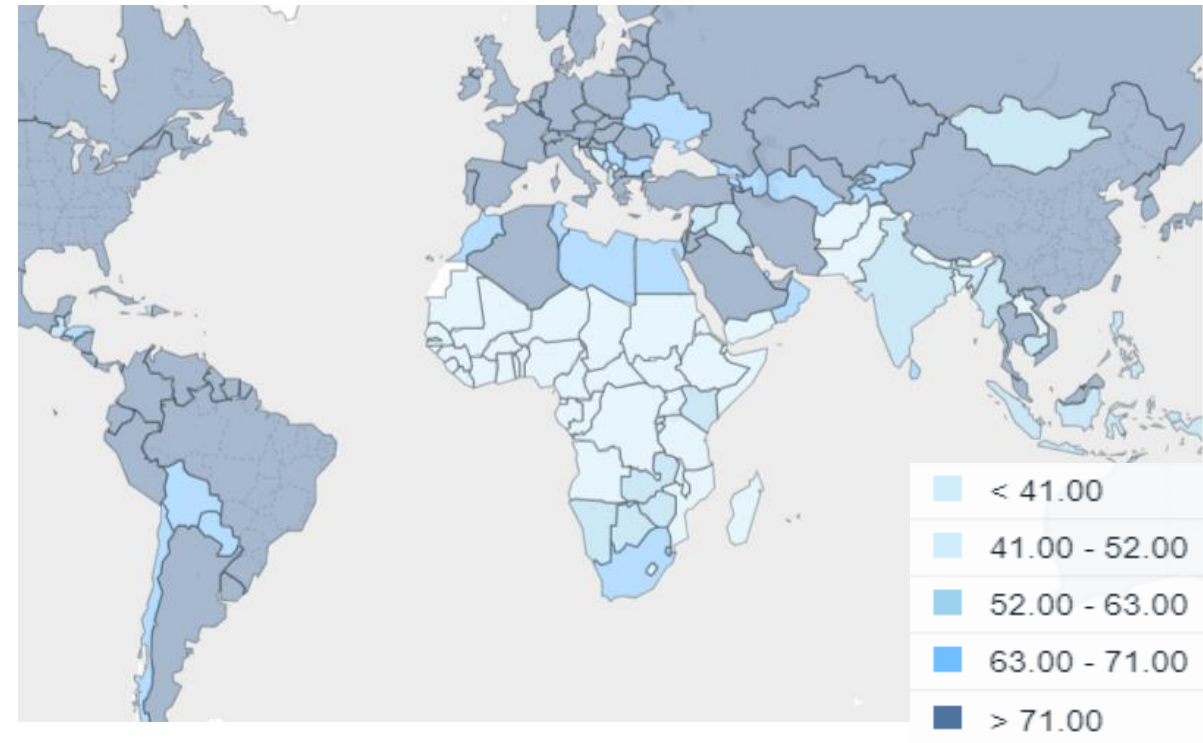
Integrated service delivery:

- Optimal integration and linkage to care to ensure efficient patient-centered services including through the use of community systems
- Strengthen and evaluate innovative approaches to enhance linkage to care and deliver effective integrated health services

Community Systems Strengthening

- Community based monitoring can help identify and address bottlenecks and gaps in service provision
- Rights-based, respectful approaches and meaningful participation of affected communities are crucial for success of malaria elimination efforts

Universal Health Coverage (UHC) Service Coverage Index by Country, 2017, for monitoring SDG indicator 3.8.1



Focused health and community systems investments can maximize impact on malaria control and elimination.

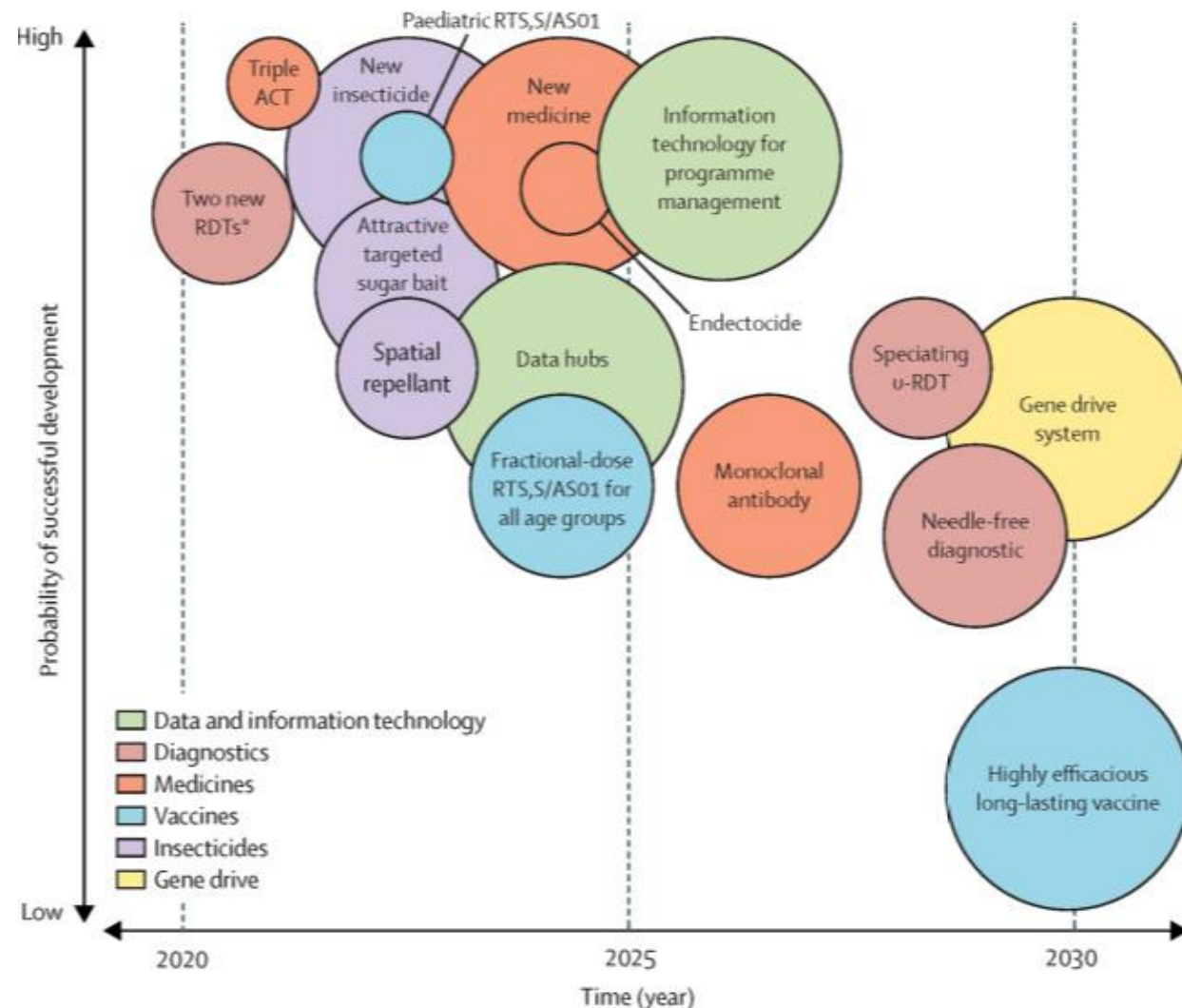
Maximizing Impact: accelerated introduction of new tools will increase impact

New tools (products, techniques, implementation strategies) in the pipeline:

- **Address biological threats of drug and insecticide resistance:** New insecticides, antimalarials
- **Attack residual transmission:** Attractive toxic sugar bait, spatial repellents, others
- **New techniques:** Gene drive, endectocides, monoclonal antibodies
- **Opportunity to use existing tools in expanded ways:** IPTi, SMC
- **Accelerating elimination:** Long-lasting vaccine, gene drive

But challenges to accelerated adoption include:

- Timelines and requirements of regulatory processes
- Evidence generation for policy setting
- Cost and relative prioritization of new tools

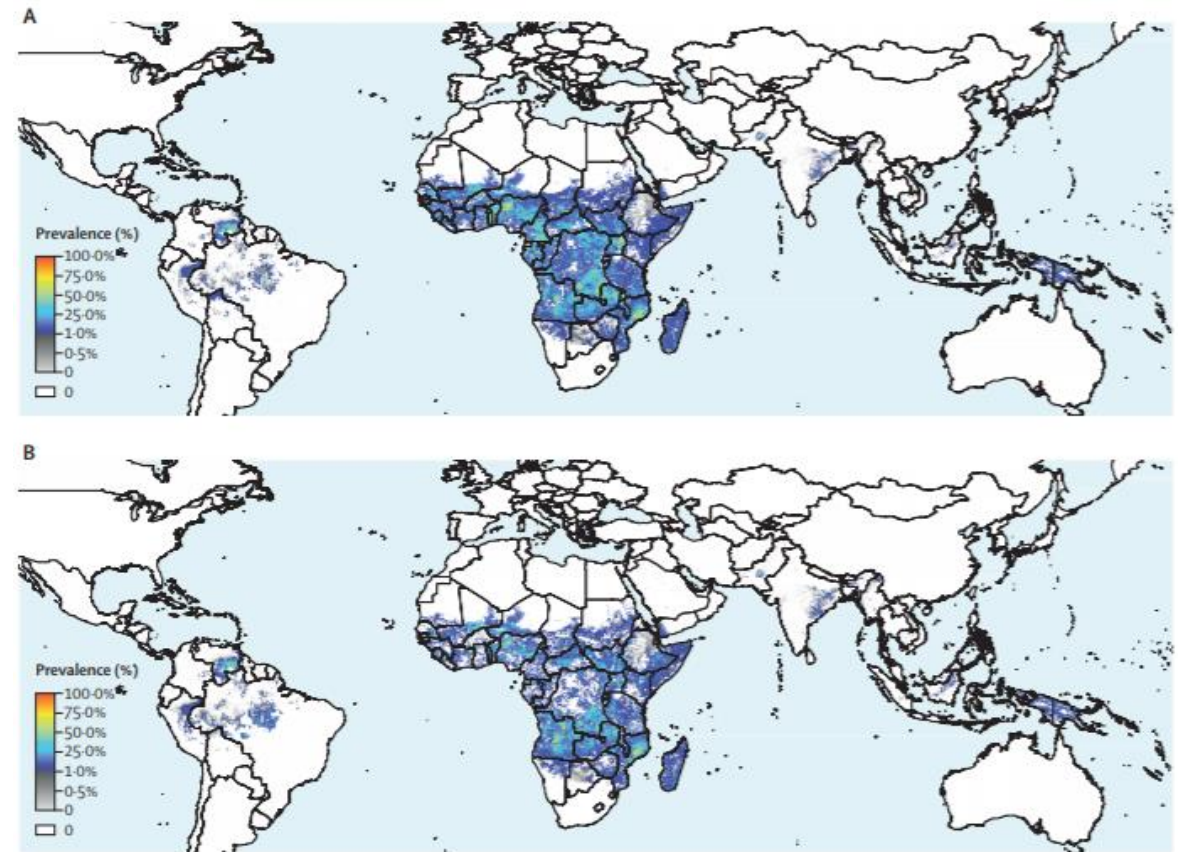


Rapid scale-up of approved new tools can have a significant impact on global malaria progress.

Maximizing Impact: opportunity for the Global Fund Strategy to play a transformative role in the malaria eradication agenda

Key discussions will focus on optimally balancing strategic approaches to maximize impact:

- Concentrating resources to achieve significant reduction in high burden settings while continuing progress towards elimination;
- Balancing lifesaving malaria specific programming with needed health and community system investments; and
- Balancing scale-up of current interventions with rapid development and deployment of new tools and approaches.



Plasmodium falciparum infection prevalence (children aged 2–10 years) projected for the years 2030 (A) and 2050 (B)

The Lancet Commission on Malaria Eradication, 2019

As 65% of international financing for malaria, the Global Fund Strategy must drive accelerated progress towards the 2030 targets for malaria.

COVID-19 threatens to undermine progress on malaria

- The COVID-19 pandemic will have both direct and indirect impact on health as it tests the resilience of health systems around the world.
- As countries respond to the pandemic the potential health, economic, and social impacts are not yet known.

Malaria:

- A WHO analysis concluded that malaria deaths in Sub-Saharan Africa could reach 769,000, twice the number of deaths reported in the region in 2018, in the face of potential disruptions to bed net campaigns and access to antimalarial medicines. This could represent a return to malaria mortality levels last seen 20 years ago.

It is critical to maintain malaria control and elimination activities

- Maintenance is critical to prevent upsurges in malaria morbidity and mortality, as well as to reduce additional stressors on health systems.
- Continuity of service provision will require modifications in delivery and adaptations as appropriate to the context, considering existing capacity, and local recommendations for social distancing.
- Market and supply chain disruptions pose risks to timely delivery of interventions.
- Ensuring continuity of malaria interventions and possible consideration of extraordinary measures will require flexibility in programming and financing.