

Accelerating malaria elimination in the Guyana Shield

Accelerating progress towards malaria elimination in the Guyana Shield is possible, with benefits outweighing the costs. A regional approach and scale-up would generate a net economic benefit of USD 80 million between 2021 and 2029.

Overview

- **Despite a recent surge in malaria, elimination in the Guyana Shield is within reach.** After decades of progress driving down the burden of malaria, the Guyana Shield has seen a recent surge in malaria cases, with a 164% increase in the region between 2015 and 2019 – a surge that jeopardizes the region’s ability to reach elimination by the Americas’ regional target date of 2030. Though there are varying levels of endemicity across the Guyana Shield, all countries contribute to the collective burden of malaria and regional coordination will be required to eliminate.
- **A coordinated, regional approach to malaria elimination is projected to be more impactful than isolated control or elimination efforts made by any one country.** Increases in cross-border migration amongst countries in the Guyana Shield – largely driven by economic activity in the region’s malaria-endemic and resource-rich interior – have driven malaria transmission in the region. Increased investment and focus on technical regional coordination for malaria efforts, such as a regional surveillance system, will be required to target response efforts to mobile populations and get the region back on track for elimination.
- **With an additional investment of USD 13.8 million over the next four years, a regional approach and scale-up of malaria efforts would generate a total net economic benefit of USD 80 million in Suriname, Guyana, and French Guiana between 2021 and 2029.** A scaled-up malaria response across the entire region is projected to result in a 25% to 40% reduction in clinical cases, elimination of *Plasmodium falciparum* (Pf) malaria in Guyana by 2025, and elimination of all malaria species in Suriname by 2024 and in French Guiana by 2029.¹
- **Establishment of a formal mechanism to facilitate coordination for malaria response amongst the countries of the Guyana Shield could drive improved targeting of malaria interventions, which, in turn, often result in financial efficiencies and increase value for money.** A coordinated regional effort would also bolster political and financial commitment to mitigate potential resurgence and to accelerate progress towards a maintained malaria-free Guyana Shield.

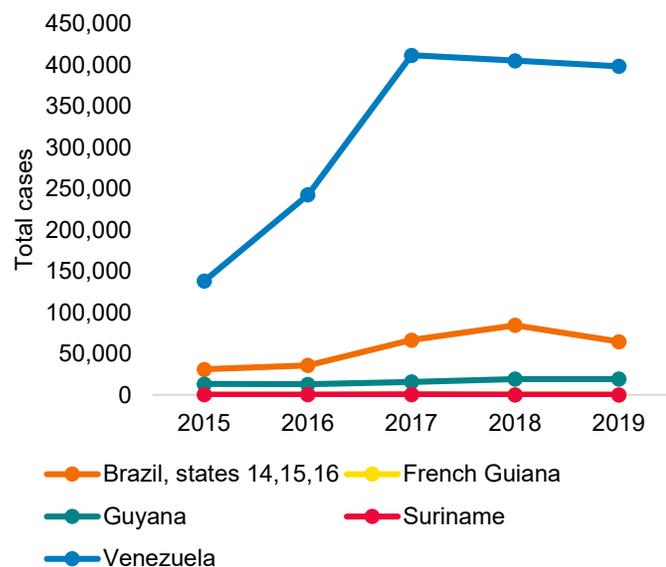
The Guyana Shield – defined as Suriname, Guyana, French Guiana², Venezuela, and the Brazilian states of Amapá, Pará, and Roraima – achieved substantial reductions in the burden of malaria over the past three decades. In recent years, however, the trend has reversed, and total malaria cases in the region have increased by 164% between 2015 and 2019, most notably in Venezuela (189% increase), the Brazilian Amazonian states (108% increase), and Guyana (45% increase). In 2019, the vast majority of cases in the region were reported in Venezuela (83%), followed by the Brazilian Amazonian states (13%) and Guyana (4%). Suriname and French Guiana contributed minimally to the regional burden (0.4% each) in 2019 (see [Figure 1](#)).

The region is characterized by economic migration between and within countries, movement that facilitates high rates of cross-border malaria transmission. Expansion of gold mining and logging activities across the region has resulted in significant migration by people seeking work as miners or mining service providers in the malaria-endemic hinterland. Increasing migration to these remote areas marked by rugged terrain require an increased investment of time and financial resources for distribution of necessary malaria commodities and services.

¹ Projected elimination is considered to have been achieved when the number of projected indigenous cases is less than 0.1 per 1,000 population at risk.

² While French Guiana is an overseas department of France, it will be referred to as a country throughout this brief.

Figure 1. Total malaria cases reported annually in the Guyana Shield, 2015 to 2019



Source: World Health Organization. World Malaria Report 2013 and 2020.

Guyana Shield: a region at a crossroads

Malaria in the Guyana Shield does not belong to any one country. Though each has varying levels of endemicity, all countries in the Guyana Shield contribute to the regional burden of malaria. **Due to the interconnectedness of the region, the achievement and maintenance of malaria elimination in any one country will likely remain dependent on progress made by the region as a whole.** Thus, collaboration between countries is essential and elimination must be a regional goal.

The Pan American Health Organization (PAHO) has put forth a bold vision to drive down the burden of malaria across the Region of the Americas in order to achieve regional elimination by 2030. With less than a decade to reach ambitious malaria elimination targets, countries urgently need to work hand-in-hand and increase investment to accelerate progress in the coming years.

Momentum can be sustained through regional scale-up

A coordinated, regional approach to malaria elimination is projected to be more impactful than the control or elimination of malaria in any one country in isolation. An epidemiological-economic model was utilized to project

malaria transmission and associated costs for various scenarios, including a regionally coordinated response. This approach includes both intensified interventions in Suriname, Guyana, and French Guiana, as well as an aspirational decrease in cases imported into these countries from Brazil and Venezuela. While this scenario is considered optimistic, as it relies on multiple interconnected factors occurring simultaneously across the region, it demonstrates the value of coordinated efforts to decrease malaria throughout the region.

According to availability of data and strategic insight, findings are presented for Suriname, Guyana, and French Guiana. The Brazilian Amazonian states and Venezuela are included insofar as their impact of imported malaria transmission on the rest of the region however costs and benefits are not reported.

What are the costs?

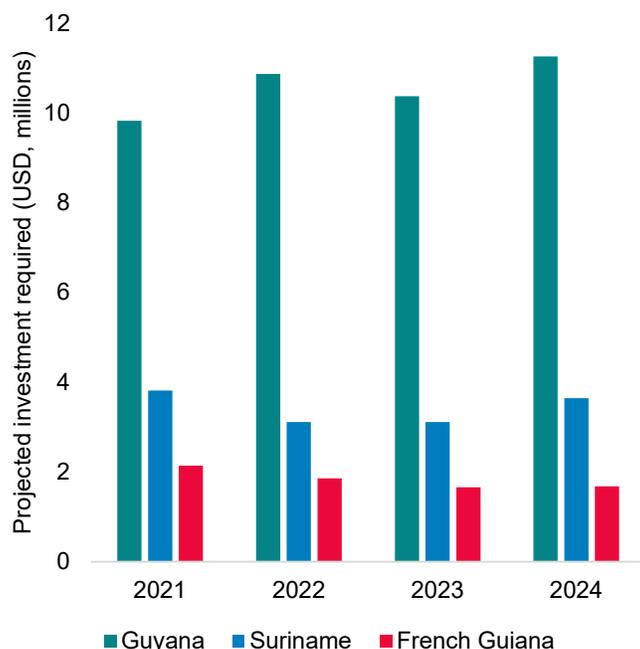
An accelerated regional approach would require a **total additional investment of USD 13.8 million** by Suriname, Guyana, and French Guiana across their national malaria responses between 2021 and 2024, equating to approximately USD 3.5 million annually. The additional investment in malaria response required by each country over the next four years, as compared with available financial commitment projections (Suriname and Guyana) or with the projected cost of continuation of current interventions (French Guiana), are as follows:

	Current financial commitments (2021-2024)	Additional investment needed for regional scale-up (2021-2024)
Suriname	USD 10.9 million*	an additional USD 3.1 million (USD 800,000 per year)
Guyana	USD 34.9 million*	an additional USD 7.5 million (USD 1.9 million per year)
French Guiana	USD 3.8 million**	an additional USD 3.2 million (USD 800,000 per year)

*Financial commitment projections for Suriname and Guyana are sourced from the respective Funding Landscape Tables, as submitted to the Global Fund (2020).

**Financial commitment projections for French Guiana were unavailable and the projected cost of continuation of current interventions was used for this purpose.

Figure 2. Projected additional investment required for regional scale up approach, 2021 to 2024



The projected total investment required for the full study period (2021 to 2029) to finance a regional scale up approach is USD 93.9 million in Guyana, USD 28.9 million in Suriname, and USD 16.4 million in French Guiana.

What are the benefits?

The simultaneous intensification of efforts and decrease in transmission across the region is projected to result in sweeping health and economic benefits. Regional coordination is projected to enable Suriname to avert 800 clinical cases over the next four years on the fast-track to elimination in 2024, four years ahead of when it would otherwise reach zero, thereby meeting its national elimination goal (Figure 2). Scaling up malaria interventions regionally is projected to result in elimination of *Pf* malaria in Guyana by 2025 — achieving the national species elimination target — and to avert over 240,000 clinical cases in Guyana over the next four years as compared to a business as usual scenario (Figure 3). The pace of elimination in French Guiana is also projected to accelerate, with malaria elimination achieved by 2029 and 2,000 clinical cases averted (Figure 4), as compared to continuation of current interventions where elimination would remain elusive before 2030.

	Cases averted with regional scale up as compared to business as usual approach (2021 – 2024)	Projected year of elimination with regional scale up
Suriname	800 clinical cases averted	Elimination of both malaria species by 2024
Guyana	242,000 clinical cases averted	Elimination of <i>Pf</i> malaria by 2025
French Guiana	2,000 clinical cases averted	Elimination of both malaria species by 2029

Aggregating costs and benefits across Suriname, Guyana, and French Guiana, **every dollar invested in regional malaria scale-up is estimated to result in USD 2.30 in economic benefit**. In total, such investment would generate a net **economic benefit of USD 80 million between 2021 and 2029**. The economic benefits of a regional approach to malaria elimination are most acutely evident in Guyana. By the year 2025, Guyana would accrue an annual economic benefit of USD 11 million. The economic benefits of accelerating malaria elimination in French Guiana are projected to result in national economic savings by 2023, and grow to nearly USD 1 million annually by 2028. Suriname is projected to incur a more modest economic gain: with an accelerated regional approach generating a 20% return on investment.

The estimated benefits are likely understated, as malaria elimination leads to other benefits not included in the economic evaluation. Regional malaria elimination could yield greater economic benefits by bolstering other industries (e.g., tourism), strengthening health systems, and improving regional health security — with evidence showing that each 10% decrease in a country's burden of malaria can result in a 0.3% growth in their gross domestic product. Malaria investments in areas such as strengthened surveillance systems can build health system capacity to respond to other global health security threats, such as COVID-19^A.

The following figures show the projected clinical case incidence from 2020 to 2029 under the various scenarios modeled. The specific interventions included under each scenario were developed by the national malaria program specific to the country context and are available in the full-length report.

Modeled Scenarios

- Business as Usual:** Maintain present levels of current interventions in Suriname, Guyana, and French Guiana and imported cases from Brazil and Venezuela into the rest of the region continue on their current trajectory.
- Scale-Up 1:** Scale-up of current interventions and introduction of new, country-focused interventions occur in Suriname and Guyana only. Business as usual assumed for the rest of the region.
- Scale-Up 2:** Scale-up of current interventions and introduction of new, country-focused interventions occur in Suriname, Guyana, and French Guiana and decrease in imported cases from Brazil and Venezuela into the rest of the region.
- Reduced Investment:** Scale-back of current interventions in Suriname and French Guiana. Business as usual assumed for the rest of the region.
- Artemisinin Resistance:** Increase treatment failure to first line-malaria treatment in Guyana. Business as usual assumed for rest of the region.

Figure 3. Projected clinical cases per 1,000 population at risk from 2020 to 2029 in Suriname

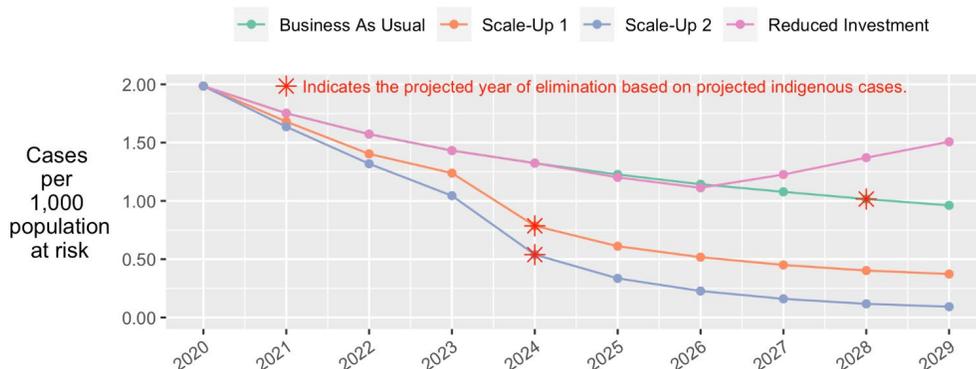


Figure 4. Projected clinical cases per 1,000 population at risk from 2020 to 2029 in Guyana

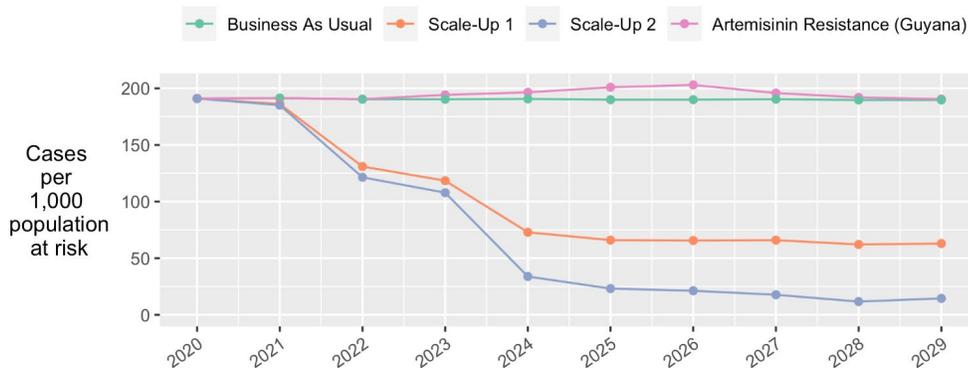
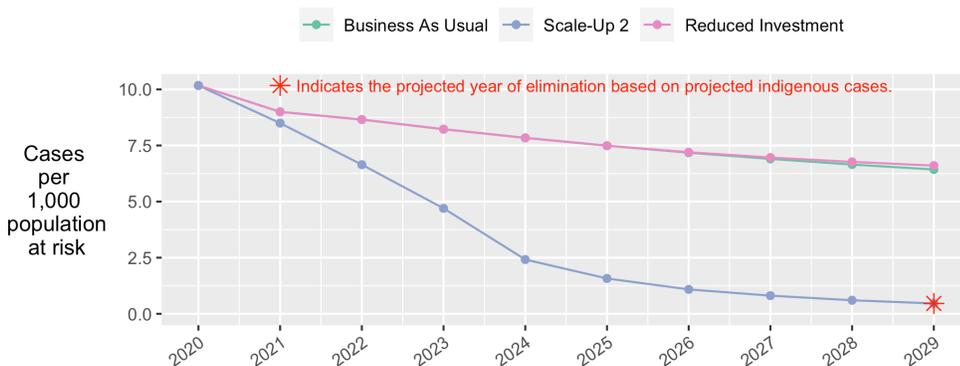


Figure 5. Projected clinical cases per 1,000 population at risk from 2020 to 2029 in French Guiana



Overcoming financing gaps to accelerate progress

To meet the financial requirements for accelerating pace towards malaria elimination, countries in the Guyana Shield will need to address sustainability and concurrently mobilize additional domestic and donor resources to maximize the impact of current financing. **Development of a regional platform to facilitate technical and financial coordination** would enable countries in the Guyana Shield to maximize efficiency of available resources, by expanding access to services and interventions where they are most needed.

The COVID-19 pandemic has further underscored the importance of cross-border collaboration in health response as lockdowns forced increased migration through malaria-endemic border zones, potentially increasing spread of both diseases. However, potential setbacks from COVID-19 could threaten hard-won gains against malaria and jeopardize domestic financing. Increased commitment to health priorities as well as technical coordination to implement harmonized interventions across the Guyana Shield will be key to combating the dual challenges of malaria and COVID-19.

Recommendations for the Guyana Shield region

- **Increased investment in the Guyana Shield's malaria response over the next four years — a projected USD 3.5 million annually — will be required to yield the above health and economic benefits.** Robust advocacy for additional regional financing for malaria will be critical for accelerating the pace to elimination and preventing potential malaria resurgence from

underfunded programs. This is particularly important as health system issues and economic stressors, exacerbated by the COVID-19 pandemic, have the potential to further threaten the stability of domestic financing for malaria. The evidence generated in this investment case strengthens the arguments for sufficient financing for malaria in the Guyana Shield.

- **Development of a regional mechanism for technical and financial coordination of malaria efforts across the Guyana Shield will be critical for achieving regional elimination.** Despite the interconnectedness of malaria transmission throughout the region, there is currently no mechanism in the Guyana Shield for formal coordination of malaria control and elimination efforts. This type of mechanism could enable more efficient use of financial resources to target interventions where they are most needed. Regional partners, such as PAHO, are in place to support development of this type of initiative in the Guyana Shield and similar regional mechanisms, such as the Elimination 8 in southern Africa, shed light on how this has been implemented successfully in other contexts.
- **The extent to which regional benefits are sustained will depend upon strengthening and maintaining surveillance across the region.** Taking steps to strengthen the regional surveillance network and improve communication and cooperation between countries would facilitate increased access to care for high-risk mobile and migrant populations. This is of particular importance as the threat of artemisinin resistance to current antimalarial drugs is monitored in the region. Serving as an example, countries in the Greater Mekong Subregion — with support from The Global Fund to Fight AIDS, Tuberculosis and Malaria — have developed a regional data-sharing platform to collect and store surveillance data to facilitate information-sharing and analysis by countries^B.

^A Newby, G., Mpanju-Shumbusho, W., & Feachem, R. G. A. (2021). Global health security requires endemic disease eradication. *The Lancet*, 397(10280), 1163–1165. [https://doi.org/10.1016/s0140-6736\(21\)00521-3](https://doi.org/10.1016/s0140-6736(21)00521-3)

^B World Health Organization. (2018). (Rep.). World Health Organization. <https://doi:10.2307/resrep28212>

The methodology, data, and evidence referenced in this summary brief, as well as additional country and regional results projected under different investment scenarios, are included in the full-length investment case report. The report is accessible through shrinkingthemalariamap.org.

The Malaria Elimination Initiative (MEI) at the University of California, San Francisco (UCSF) believes a malaria-free world is possible within a generation. As a forward-thinking partner to malaria eliminating countries and regions, the MEI generates evidence, develops new tools and approaches, disseminates experiences, and builds consensus to shrink the malaria map. With support from the MEI's highly skilled team, countries around the world are actively working to eliminate malaria. shrinkingthemalariamap.org

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