

Investing in Malaria Elimination in the Greater Mekong Subregion

Eliminating malaria in the Greater Mekong Subregion can yield 5:1 economic returns, stem the tide of drug resistance, and strengthen regional and global health security.

Overview

- Malaria elimination in the Greater Mekong Subregion (GMS) will end the growing threat posed by artemisinin resistance.
- With adequate resources and steadfast commitment, countries in the GMS have the potential to achieve elimination by 2026, four years ahead of World Health Organization's goal to eliminate malaria in the GMS by 2030.
- The estimated total cost to achieve malaria elimination in the GMS and prevent reintroduction by 2030 is USD 2.5 billion. Targeting of interventions may reduce these costs by at least 20%.
- Ending local malaria transmission in the GMS can generate economic benefits of approximately USD 9 billion (2016–2030) by increasing productivity and reducing deaths, cases, and household and healthcare spending.
- Malaria elimination in the GMS yields a five-fold return on investment.

Eliminating malaria in the Greater Mekong Subregion by 2030 can lead to:

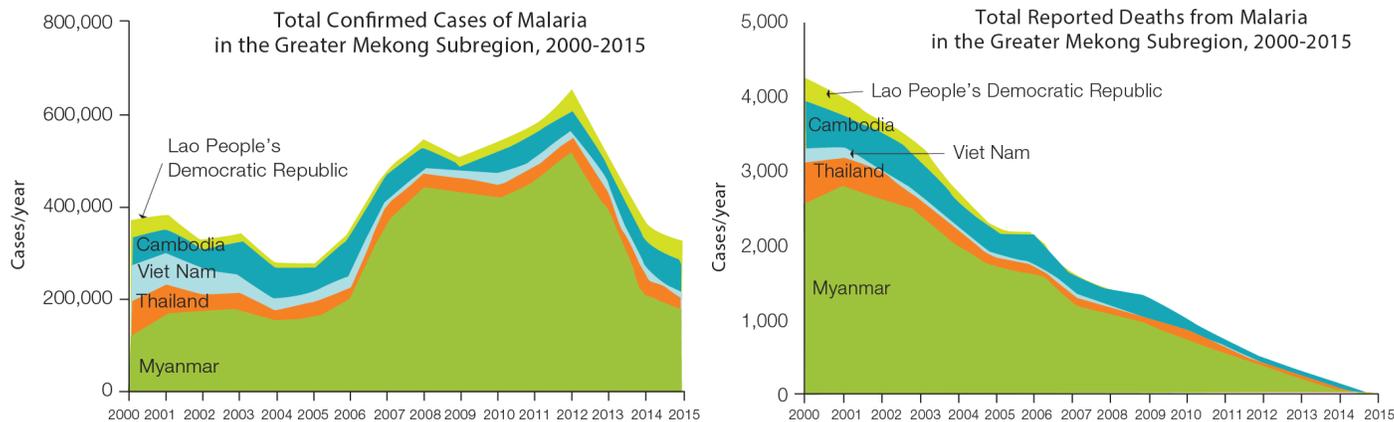
- **Over 91,000 lives saved**
- **23.5 million cases averted**
- **5:1 return on investment**
- **Over USD 9 billion in economic benefits**



Focused malaria control in the Greater Mekong Subregion (GMS)¹ has yielded impressive results: deaths from malaria decreased by 98% between 2000 and 2015—from 4,281 to just 85. Malaria cases declined by more than 61% in a four year period (2011–2015). By making malaria control a priority, governments and partners in the GMS have successfully mobilized domestic and donor financing to scale-up interventions, capacity building, and cross-border collaboration. Regional cooperation and the pooling of resources have facilitated great progress.

Drug Resistance Threatens Progress

Despite the gains made against malaria by countries in the GMS, the disease continues to be a serious threat (Figure 1). Over 152 million people in the subregion live in geographies with ongoing malaria transmission, and roughly 30 million are in high-risk areas. Resistance to artemisinin—the front-line drug treatment for malaria—has been detected in all five countries of the GMS. In Cambodia, treatment failure rates of up to 25% have been reported. The spread of drug-resistant malaria to Africa and large economies in Asia like India would be devastating—million of lives would be at risk and decades of effort and investment would be compromised.

Figure 1. Cost of malaria elimination and POR, 2016–2030

Building on the Momentum

In 2014, the World Health Organization (WHO) adopted a strategy to eliminate malaria caused by all species in the GMS by 2030.² In the same year, Asia Pacific heads of state, including those in the GMS, committed to eliminating malaria in the region by 2030. This goal was affirmed by the adoption of the Asia Pacific Leaders Malaria Alliance roadmap—a detailed plan for achieving zero malaria that has received high level support from the regional leaders at the East Asia Summit.

Drug resistance is the greatest threat to achieving malaria elimination and ensuring health security in the region. Intensifying efforts, prioritizing key interventions, and advancing the research and development pipeline to accelerate elimination in the GMS will require more financing. Although funding for malaria has increased more than four-fold since 2000—particularly due to donors like the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund)—estimates from national malaria programs in the subregion suggest significant financing gaps, which could jeopardize progress if left unmet. Studies have associated financial constraints and weakened political commitment to malaria with costly and deadly resurgences.

Developing a Regional Investment Case

To assess the economic rationale for malaria elimination in the GMS, the Malaria Elimination Initiative (MEI) at the University of California, San Francisco Global Health Group, with support from the Asian Development Bank

and the Bill & Melinda Gates Foundation, developed an investment case for malaria elimination in the subregion. The investment case estimates the costs of elimination and prevention of reintroduction (POR) of both *Plasmodium vivax* and *Plasmodium falciparum* in the GMS through 2030, estimates the economic returns of elimination, and explores feasible and sustainable financing options for the GMS. There are considerable uncertainties associated with these estimates. The transmission model was designed with a single homogeneous patch for the whole of each country. Thus, spatial heterogeneity within each country was not modeled including malaria transmission and interventions. The full-length report with detailed methods and findings are accessible through shrinkingthemalariamap.org.

The region-specific evidence generated by the investment case can inform strategic planning, domestic and donor resource mobilization, and advocacy to hasten elimination in the region and eliminate the threat of drug resistance.

Eliminating Malaria

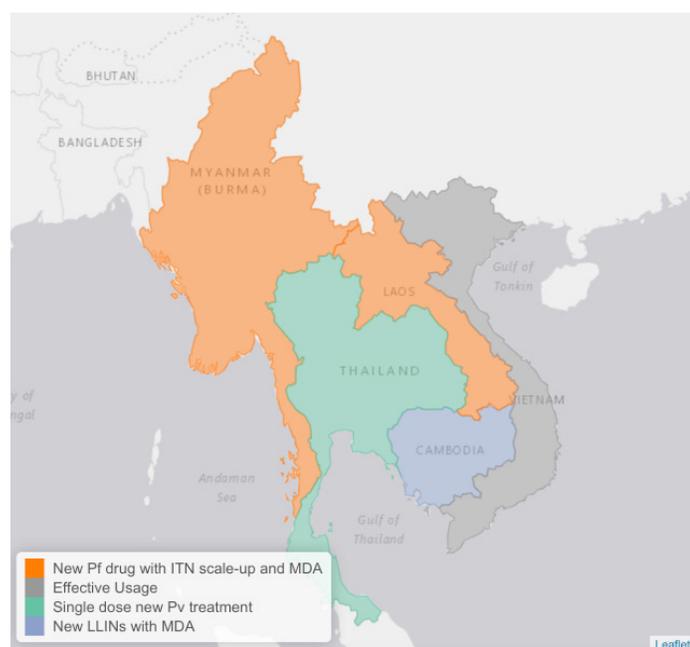
Projected elimination scenarios

Using a dynamic malaria transmission model, the minimum elimination scenarios required to eliminate malaria in the GMS by 2030 and the cost of implementing them were estimated (Figure 2 and Table 1). The model predicted possible elimination date ranges and determined that, using a variety of aggressive interventions with unabated funding levels, all five GMS countries can interrupt local malaria transmission on or before their national or regional elimination target dates.

Table 1. Projected elimination dates and targets

Country	Predicted elimination date	Elimination target date
Cambodia	2023 (2022, 2030)	2025
Lao PDR	2025 (2022, 2030)	2030 (regional)
Myanmar	2024 (2024, 2030)	2030 (regional)
Thailand	2024 (2025, 2029)	2024
Vietnam	2022 (2022, 2027)	2030

Figure 2. Modeled minimum elimination scenarios



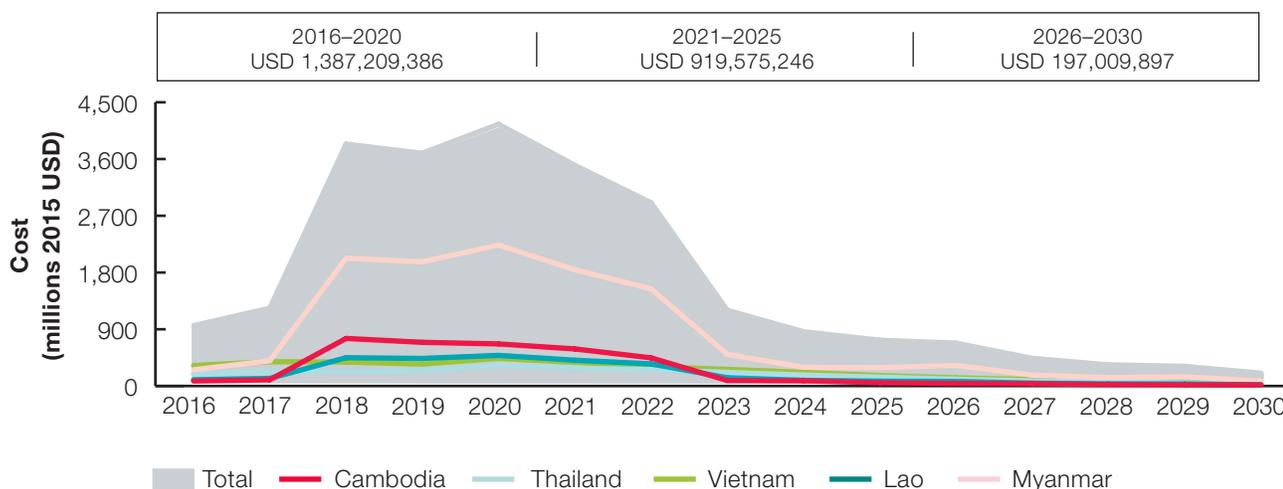
Eliminating Malaria: What Are the Costs?

The median cost of the minimum elimination scenarios in 2016 is over USD 95 million. Annual costs peak in 2020 at roughly USD 415 million, then decrease back to about USD 100 million by 2030 when elimination is expected to be achieved in all five countries. As expected, costs for elimination are highest in Myanmar, where the burden is highest. In total, malaria elimination and POR in the GMS by 2030 is estimated to cost a total of USD 2.5 billion. Better targeting of interventions in low-risk areas could reduce the cost by at least 20% to just over USD 2 billion.

Eliminating Malaria: What are the Benefits?

Malaria elimination can avert over 91,000 deaths and 23.5 million clinical malaria infections in the GMS, generating economic benefits of over USD 9 billion. Malaria elimination and POR yield a return of over five times the investment. These estimated benefits are conservative, as malaria elimination leads to other benefits that were not included in the economic evaluation. Eliminating malaria also eliminates the spread of drug resistance, contributing to human health security. It has the potential to contribute to the economy by increasing tourism, school performance, and cognitive ability. Investments in malaria surveillance can also improve the capacity of health systems to identify and quickly respond to other communicable disease outbreaks. These externalities are challenging to quantify and have not been included in this analysis but are worthy of consideration.

Figure 3. Cost of malaria elimination and POR, 2016–2030



Estimating Current and Future Funding Gaps

A median resource envelope of USD 227 million is needed annually until 2020 to achieve elimination in the GMS. Available annual financing is projected to be USD 148 million for 2018–2020 with the anticipated Regional Artemisinin Resistance Initiative 2 Elimination (RAI2E) grant from the Global Fund. This leaves a gap of about 45% of the total needed. Total financing to the region is expected to drop significantly after the end of the RAI2E in 2020, further widening the gap unless significant government or other resources are mobilized.

Securing Adequate Resources

Projected resources available to fight malaria in the GMS are just over half of the total amount required to reach zero. To meet the financial requirements of malaria elimination, countries in the GMS will need to address longer-term sustainability and concurrently mobilize additional domestic and donor resources to maximize the impact of current financing.

The GMS countries have experienced robust economic growth in recent years. Thailand and Vietnam in particular are rapidly industrializing countries with a growing manufacturing sector. The countries have diversified their economies in recent years and expanded local industries to produce higher-value products, and the region is increasingly being seen as a major low-cost production hub. Governments are also implementing reforms to improve the efficiency and productivity of the economic sectors. Some initiatives include the liberalization of prices, elimination of subsidies, removal of trade restrictions, tax reforms, and exchange rate unification. These reforms have increased foreign direct investment in the GMS and garnered greater private sector interest. Air travel has also doubled between 2010 and 2015, increasing intra-GMS and inter-regional connectivity and facilitating a doubling of trade within and outside the subregion in the past 15 years. Tourism has also increased by more than 340% since 2000 and contributes more than USD 45 million per year to the economies of the GMS countries.

Domestically, resources can be mobilized through expanding the revenue base for malaria. “Sin taxes,” or taxes on harmful products such as alcohol and tobacco, are a way to potentially increase supplementary revenue for health and have been successfully implemented in other Asian countries such as the Philippines. Other types of taxes include levies on sugar-sweetened beverages, foreign currency transactions, and transactions in international finance markets. The large revenue base and the long-term nature of taxes make such instruments reliable and sustainable sources of funding.

Resources can also be mobilized by capitalizing on efficiencies in the current domestic funding landscape. For example, the malaria programs can work with other ministries such as agriculture, or with other mosquito-borne diseases such as dengue, to integrate approaches and interventions.

Regionally, these and other developments have created several opportunities for resource mobilization for malaria and human health security. The Association of Southeast Asian Nations (ASEAN) Tourism Association, which covers the travel and tourism sector across 10 Southeast Asian countries including the GMS, could support engagement of the tourism sector in malaria elimination efforts. The region also has a number of business platforms that can be included to promote the engagement of the burgeoning private sector. For example, the Mekong Business Initiative and the ASEAN Business Club promote business integration within the region and in the broader ASEAN Economic Community.

Multilateral development banks and other non-traditional financiers are expanding their health portfolio to include lending for health security and universal health coverage. With the expanding economies, countries may be more inclined to take loans for health. These new mechanisms, coupled with blended financing options that may include interest and/or principal buy-downs from traditional donors, are potential sources for additional resources.

International and regional funds pool resources from various sources including governments, aid agencies, development institutions, corporations, foundations, and individuals may efficiently finance certain causes or objectives. The RAI2E grant from the Global Fund may be expanded to include pooling from other sources of financing.

This investment case provides evidence of the benefits in investing in malaria elimination in the GMS. The evidence can be used to support advocacy efforts to mobilize funding for malaria in the subregion and ensure the funding gap does not result in resurgence or the spread of resistance. The window of opportunity for such investments to eliminate malaria and secure health security in all of Asia Pacific and the world is closing fast.

Endnotes

¹The GMS traditionally refers to the Mekong River basin in Southeast Asia, which includes six countries—Cambodia, China (Yunnan Province), Lao People’s Democratic Republic (Lao PDR), Myanmar, Thailand, and Vietnam. In this document, however, the term GMS refers to the five countries in the Regional Artemisinin-resistance Initiative, which excludes China.

²World Health Organization. 2016. Eliminating malaria in the Greater Mekong Subregion: united to end a deadly disease. Geneva: WHO.

The **Malaria Elimination Initiative (MEI)** at the University of California San Francisco (UCSF) Global Health Group 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, documents and disseminates elimination 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 – a goal that nearly 30 countries will achieve by 2020.

shrinkingthemalariamap.org

