

Investing in Malaria Elimination in Bangladesh, Indonesia, and Papua New Guinea

Malaria elimination in Bangladesh, Indonesia, and Papua New Guinea can yield health, social, and economic benefits and is a "best buy" for public health

Background

Countries in the Asia Pacific region have made significant progress in combatting malaria, reducing deaths from the disease by more than 50% since 2000. These gains have been achieved in part because of increased political and financial commitment, allowing the scale-up of effective tools for preventing, diagnosing, and treating malaria. Several countries are now working towards elimination, and a regional goal for a malaria-free Asia Pacific by 2030 has been endorsed at the highest levels.

The region continues to rely on donor financing, particularly from the Global Fund to Fight AIDS, Tuberculosis and Malaria, to meet its needs. The region has attracted between 12-21% of global malaria funding from 2006-2010. However, since 2009, there has been steady decline in external financing for malaria, particularly in the low-burden, eliminating countries. Sustained political and financial commitment will be critical to prevent the risk of resurgence and for these three countries in the region to reach its goal of malaria freedom by 2030.

Study Objectives

The investment cases for malaria elimination in Bangladesh, Indonesia, and Papua New Guinea provide economic evidence for government and development partner decision-makers to guide and inform strategies to increase the amount of sustainable financing available to the Asia Pacific Region.

The investment cases specifically aim to:

1. Estimate the economic burden of malaria in 2015;
2. Project the financial requirements of malaria elimination through 2030;
3. Estimate the economic returns of malaria elimination through 2030; and
4. Explore opportunities for resource mobilization for malaria elimination.



Methods

The costs and benefits of elimination were generated using the Malaria Elimination Transmission in the Asia Pacific (METCAP), developed by Mahidol-Oxford Tropical Medicine Research Unit (MORU) in collaboration with MEI. Empirical cost data were incorporated into the epidemiological model to estimate the cost of elimination and the economic impact of interventions against transmission of *P. falciparum* and *P. vivax*; this permitted the examination of numerous control and elimination scenarios to determine cost, economic, and epidemiological efficiencies.

Several scenarios were simulated and outputs from three scenarios were used to develop these investment cases. A "business as usual" and "reverse" scenario represents the counterfactual to malaria elimination.

Cost Projections

We estimated the costs of the elimination scenario by multiplying the outputs of the transmission model by unit costs from a costing exercise and relevant inputs from published literature.

Benefits Estimation

We calculated the benefits of malaria elimination by first subtracting the estimated cases and deaths of the elimination scenario from the corresponding outputs of the business as usual and reverse scenarios. The resulting figure is referred to as the morbidity and mortality averted by malaria elimination.

Return on Investment (ROI)

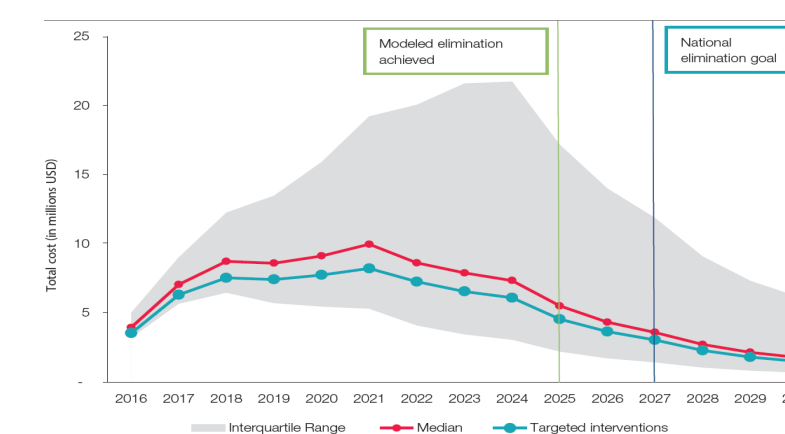
To calculate the ROI of malaria elimination for 2016-2030, we subtracted the benefits of elimination by the incremental cost of elimination and divided the resulting figure by the incremental cost of elimination.

Results

Bangladesh

National malaria elimination can generate economic benefits of approximately USD 343.5 million from 2016-2030 by increasing productivity and reducing malaria cases, deaths, and household and healthcare spending. can lead to over 1,577 lives

saved, nearly 830,000 cases averted, and a 7:1 return on investment.

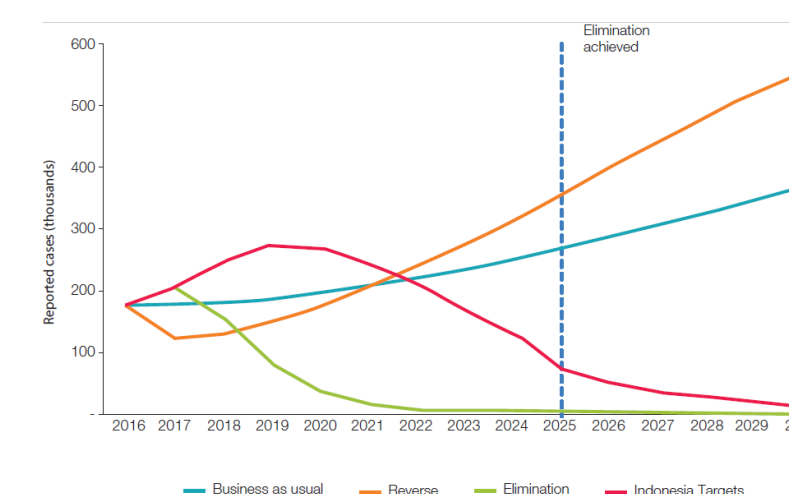


Cost of elimination in Bangladesh

Total cost (2016-2030) based on outputs from the METCAP: USD 91.54 million (range USD 75.3 million to USD 112 million)

Indonesia

Malaria elimination in Indonesia is estimated cost USD 2 billion for 2016-2030, an average of USD 145 million per year. Successful elimination by 2030 can generate economic and financial benefits of approximately USD 18 billion, save 41,000 lives, avert 25 million cases, and provide a 10:1 return on investment.

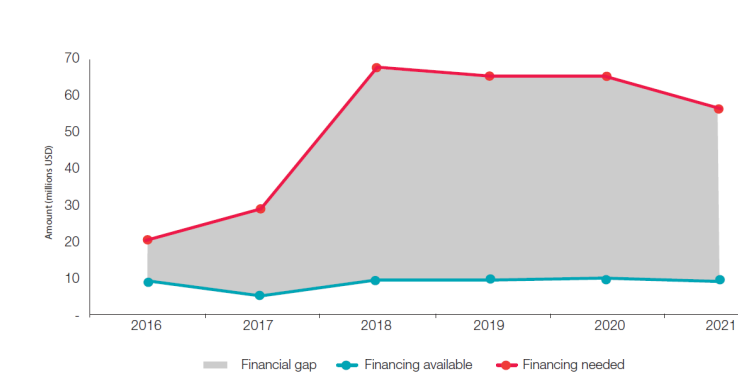


Modeled elimination scenario in Indonesia

METCAP generated these scenarios to model the mean number of clinical cases between 2016 and 2030.

Papua New Guinea

Malaria elimination in PNG is estimated to cost USD 425 million over 15 years or an average of USD 28.34 million per year. Malaria elimination in PNG by 2030 can generate an estimated USD 1.92 billion in economic benefits, save over 7,000 lives, avert 3.6 million cases, and provide a return on investment of 9:1.



Financial landscape in PNG

If PNG decides to implement the modeled elimination scenario, it will face significant funding gaps in the next six years (roughly USD 249 million or USD 42 million per year).

Limitations

The METCAP model was designed with a single homogeneous patch for the whole of each country. Thus it is unable to take account of subnational heterogeneities in transmission and delivery of interventions. The project team are planning to develop the METCAP model to incorporate multiple patches for each country to model scenarios for individual countries in detail.

Conclusion

Malaria elimination in the Asia Pacific region is an achievable goal with benefits outweighing the costs, paving the way for global malaria eradication.

These estimated benefits are considered to be 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. Additional positive externalities include increased tourism, a strengthened health system, and improved regional health security.

To meet the financial requirements of malaria elimination, countries in Asia Pacific will need to address longer-term sustainability and concurrently mobilize additional domestic and donor resources to maximize the impact of current financing.

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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.

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