Defeating malaria in Asia, the Pacific, Americas, Middle East and Europe
Roll Back Malaria Partnership

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Malaria is a resilient foe. With 3.3 billion people at risk of infection globally, the disease continues to be a major burden on health systems in poor countries. Outside of Africa, malaria inflicts the heaviest toll in the Asia-Pacific.

The World Health Organization (WHO) has reported around 34 million cases of malaria in regions outside of Africa in 2010 causing 46,000 deaths. India remains by far the most affected, but rates are also high in Indonesia, Pakistan, Myanmar, Solomon Islands, and Papua New Guinea.

Beyond the human toll, malaria’s economic costs include health-care expenses and diminished productivity.

The Asia-Pacific has experienced rapid economic growth over the last decade. Regional cooperation is reducing barriers between countries. There is recognition across the Asia-Pacific that working collectively is the best way to address common challenges. Malaria is one such problem.

The emergence of artemisinin resistance in Cambodia, Thailand, Myanmar, and Viet Nam is a worldwide public health risk. Failure to contain drug-resistant malaria in Asia could trigger its spread throughout the world. This would lead to a surge in cases and deaths, and undermine global progress in malaria control.

We are witnessing a growing regional emergency requiring a well-coordinated response.

The Australian Government is committed to malaria control and elimination in the Asia-Pacific. We are working with our partners—governments, civil society, international organizations, such as WHO—to address the effects of malaria on the world’s most vulnerable. Together, we are working towards a strengthened regional response to artemisinin resistance.

Given the unique patterns of malaria in the Asia-Pacific, we welcome initiatives to review the challenges and opportunities for controlling and eliminating this disease. This Briefing for policy-makers, together with its companion piece, will contribute to our understanding of malaria-related priorities for the coming years.

Bob Carr
Minister for Foreign Affairs, Australia
Introduction

While the African continent carries the major burden of malaria, the disease also affects 51 countries in other parts of the world. There are 20 countries with ongoing malaria transmission in the WHO South-East Asia and Western Pacific regions, 21 countries in the Region of the Americas, and 10 in the Eastern Mediterranean and European regions. Outside of Africa, a total of 2.5 billion people are at risk of the disease, with 640 million being at high risk.

In 2010, there were an estimated 34 million malaria cases outside of Africa, and the disease caused approximately 46,000 deaths. Countries in Asia and the Pacific (i.e. the WHO South-East Asia and Western Pacific regions) carry the biggest disease burden, with an estimated 88% of cases and 91% of malaria-related deaths. India, Indonesia, Pakistan, Myanmar, and Papua New Guinea have the highest malaria incidence.

Over the last decade, the global malaria landscape changed dramatically, and malaria received worldwide recognition as a priority public health issue. The increased availability of international funding—primarily through the Global Fund to Fight AIDS, Tuberculosis and Malaria—enabled ministries of health to vastly expand their malaria control operations. Delivery mechanisms have been established for mass distribution of conventional insecticide-treated nets (ITNs) and long-lasting insecticidal nets (LLINs); indoor residual spraying (IRS) programmes have been consolidated; and diagnostic testing, treatment, and surveillance have been scaled up (Box 1).

As a result, malaria mortality rates have decreased by 30% in countries outside of Africa, and 34 of the 51 countries have reduced their cases by more than 50%. Many countries are now on target to reach the malaria-related Millennium Development Goals and the World Health Assembly target of reducing malaria cases by at least 75% by 2015. The scale-up of interventions has not only lowered malaria-induced morbidity and mortality in many countries, but allowed ministries of health to reorient their programmes from the goal of controlling malaria to the goal of eliminating the disease altogether.

Established in 1998 by WHO, UNICEF, the United Nations Development Programme, and the World Bank, the Roll Back Malaria (RBM) Partnership serves as the overall umbrella for global malaria control efforts, aligning hundreds of partners behind a common strategy to end malaria deaths. The RBM Global Malaria Action Plan, launched in 2008, provides a global framework for action, facilitating collaboration and coordination among different partners. During the past decade, the RBM Partnership has built political commitment, improved endemic countries’ access to funding, and ensured that WHO policies and recommendations for prevention, diagnosis, and treatment of malaria are widely disseminated to partners.

Despite the successes of malaria control outside of Africa, the disease continues to be a major burden not only on individuals and families, but also on national health systems, requiring constant vigilance and tailored control strategies for different geographical areas within countries. It continues to be a barrier to economic development, tourism, and foreign investment. The fight against malaria is further complicated by growing parasite resistance to antimalarial drugs and emerging mosquito resistance to insecticides. If these threats are not contained, they could undermine global malaria control efforts and reverse the impressive gains made in the last decade.

This Briefing for policy-makers and its companion document, a detailed analytical report, shed light on the most urgent challenges for malaria control and elimination in affected regions outside of Africa. The brief is intended for high-level decision-makers in governments, as well as for donor organizations and partners in the global malaria community.

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*The uncertainty range for malaria cases outside of Africa is 32 to 45 million, while for malaria deaths it is 42,000 to 70,000.
Box 1: Tools to prevent and treat malaria outside of Africa

Countries can control malaria and move toward eliminating the disease through a multi-pronged strategy focused on achieving high coverage of vector control interventions and expanding access to diagnostic testing and quality-assured artemisinin-based combination therapies (ACTs). LLINs have been found to reduce malaria incidence by 50% in a diverse range of settings, significantly reducing unnecessary treatment costs.

- Delivering an LLIN that protects two people for three years costs US$ 1.25 per person per year.
- Large IRS programmes cost approximately US$ 2.50 or less per person protected per year.
- The cost of a rapid diagnostic test (RDT) is approximately US$ 0.60.
- The average price of a three-day course of ACT is US$ 0.50 for children, and less than US$ 1.50 for adults (1).

Malaria control as a development challenge

Following successful elimination campaigns in most of the northern hemisphere in the 1950s and 1960s, malaria is now a disease primarily affecting low and lower-middle income countries. The distribution of malaria overlaps with the global map of poverty (Figure 1) and, within endemic countries, poor and vulnerable communities are impacted more severely than others. Controlling and eliminating malaria is therefore very much a development challenge—one that is inextricably linked with poverty reduction and infrastructure development as well as health system strengthening.

Poverty is both a cause and consequence of malaria

Given the treatment costs and the financial losses resulting from work absenteeism, malaria imposes a substantial burden on individuals and affected families. The disease causes disruption to schooling and reduces the days worked not only of the sufferers but of those who care for them. For example, a single episode of malaria in India has been found to reduce the number of days worked in a household by 13, while the estimated overall monetary losses (income losses together with treatment expenses) could amount to between 200 and 400 Indian rupees (US$ 3.50 to 7.00) (2).

With an estimated 22.5 million malaria cases in India (3), this translates to an annual cost of US$ 79 to 157 million, or 0.01% of gross domestic product each year. In states with the highest incidence rates, such as Chhattisgarh, Jharkhand, Meghalaya, Mizoram, and Orissa, the annual cost of illness represents more than 0.1% of a state’s domestic product. The poorest 10% of the Indian population rely on sales of their assets or on borrowing to pay for health-care services, reducing a family’s ability to access basic goods and affecting their long-term economic prospects.

*The uncertainty range for malaria cases in India is 17 to 30 million.
Malaria and poverty

Countries with higher proportions of their population living in poverty (less than US$ 1.25 per day) have higher death rates from malaria.

The malaria burden also exacts a significant economic cost on societies. Businesses in endemic regions incur costs from preventing, diagnosing, and treating malaria, and register financial losses due to work absenteeism and reduced productivity. The disease discourages tourism investments and markets may remain underdeveloped owing to traders’ unwillingness to travel to and invest in businesses located in malaria-endemic areas. At the same time, the combined effect of these factors further limits economic growth in some of the poorest regions.

Because their economies are less developed, many malaria-endemic countries have weak and under-resourced health systems, and public health spending tends to remain significantly below the private, out-of-pocket spending on health care. In the five countries most affected by malaria outside of Africa—India, Indonesia, Pakistan, Myanmar, and Papua New Guinea—the annual per capita government expenditure on health is less than US$32 per year. In Myanmar, it is US$2 per year, while in Pakistan, it is US$7 per year.5

Health systems in many endemic countries are characterized by the existence of long-standing health inequalities, with life expectancy and access to health services depending heavily on people’s ethnicity, societal position, education, gender, age, and geographical location. Disease

surveillance and health information systems tend to be weak, and most malaria-endemic countries do not have well-functioning birth and death registration systems. Of the 51 endemic countries outside of Africa, 19 do not produce cause-of-death statistics at all (4).

The fight against malaria is also rendered difficult by weak pharmaceutical regulation, the wide availability of oral artemisinin-based monotherapies (and other antimalarials that do not meet international quality standards), and a lack of adequate access to quality-assured ACTs. All these factors are important drivers of drug resistance.

Given their resource constraints and weak health systems, most endemic countries lack adequate funding to deliver prevention tools or access to treatment to all populations at risk. Thus, impoverished populations are denied access to essential interventions that can prevent or cure malaria. While the number of conventional ITNs and LLINs delivered outside of Africa rose seven-fold from 2003 to 2010, only 125 million of the 640 million people at high risk of the disease were protected through vector control interventions in 2010.

**Malaria affects vulnerable groups disproportionately**

As malaria is beaten back in countries outside of Africa, it is becoming increasingly concentrated in marginalized population groups, including poor and rural communities; ethnic, religious, and political minorities; and communities living in hard-to-reach areas and border regions.

These communities often lack access to health care, and are difficult to reach with mass bednet distribution campaigns or public awareness campaigns about the dangers of malaria. Statistics reveal that the disease burden affects these groups disproportionately. For example, tribal communities in India constitute only 8% of the total population but they contribute 25% of the total malaria cases.

For some of these groups, access to formal health care and preventive measures may be more difficult due to language barriers or traditional beliefs. It is also often more difficult, and therefore more costly, to offer services to such populations due to infrastructural challenges, security concerns, or political considerations. Nevertheless, many countries offer successful examples of how extending these benefits is possible. In Cambodia, for instance, diagnostic testing for malaria was provided to remote tribal populations through the training of community health workers on the use of rapid diagnostic tests (RDTs).

Mobile populations such as migrant workers, refugees, and internally displaced people are also disproportionately affected by malaria. These populations have limited access to preventive interventions and health facilities, and often do not receive proper and timely treatment for their malaria infection. Myanmar has one of the largest internally displaced populations in Asia (approximately 340,000) (5), while Thailand has become a major destination for migrants from Cambodia, the Lao People’s Democratic Republic, and Myanmar (6).

Population movement due to demographic, economic, and political pressures, and natural disasters or conflict may also push vulnerable communities to leave malaria-free areas and move into endemic zones. Asia is the region of the world most affected by sudden-onset natural disasters, and the likelihood of such events growing in number in the future is very high (6).
Malaria outside of Africa

The risk of malaria infection in populations outside of Africa is greatly variable. In some settings, such as parts of Papua New Guinea, transmission can be intense and individuals may be infected several times each year, experiencing “Africa-like malaria”. In other areas, transmission intensity is so low that the annual risk of infection is less than 1 case per 1000 people. In some areas, infection rates are so low that individuals do not develop partial immunity against the disease, meaning that in certain climate and social conditions, malaria prevalence can rapidly increase and cause epidemics.

Outside of Africa, malaria is characterized by great diversity of malaria-transmitting mosquitoes and the fact that Plasmodium (P.) falciparum and P. vivax parasites are both prevalent. P. falciparum malaria—the most deadly form of the disease—is responsible for approximately 50% of cases, while P. vivax accounts for most of the rest. While P. vivax is less likely to trigger severe malaria and rarely kills, it does lead to considerable illness and work absenteeism, just like P. falciparum. Because it has a stage in the human liver that can be dormant for many months, P. vivax is more challenging to control and suppress, presenting a unique challenge to endemic countries.

In Asia and the Pacific, the malaria response is also complicated by the emergence of a zoonotic form of the disease. The first case of a human infection with P. knowlesi malaria—a disease known to affect macaque monkeys mainly—was reported in Malaysia in 1965. Since then, cases have been reported in Thailand, Cambodia, Viet Nam, and the Philippines as well. P. knowlesi malaria is often misdiagnosed, which can result in serious illness and can be fatal.

Progress in defeating malaria has been substantial

Despite the challenges, tremendous progress has been registered outside of Africa in the fight against malaria between 2000 and 2010. Malaria prevention and control interventions have been significantly scaled up (Figure 2), leading to an overall 30% decrease in malaria mortality rates. During this period, 34 countries reduced their cases by more than 50% (Figure 3).

Since 2007, four countries have been certified by WHO as free of malaria (Armenia, Morocco, Turkmenistan, and the United Arab Emirates). The WHO European Region is aiming for malaria elimination across the entire region by 2015. P. falciparum transmission has already been eliminated, with the last cases reported in Tajikistan in 2008. Only P. vivax remains, with local transmission occurring just in Azerbaijan (50 cases in 2010), Tajikistan (111 cases), and Turkey (9 cases). Georgia reported no locally acquired cases in 2010.

Argentina, El Salvador, Mexico, and Paraguay are also close to eliminating malaria and have reported few cases—mostly P. vivax—in recent years. Iraq reported no cases due to local transmission in 2009 and 2010. Bhutan reported only 401 cases in 2010, while Sri Lanka has reduced its number of cases from more than 200 000 in 2000 to less than 700 in 2010. Several other countries are revising their malaria control strategies to scale up efforts for nationwide elimination.

Altogether, 17 countries outside of Africa are in the pre-elimination or elimination stage of malaria control. These countries are poised to eliminate malaria in the foreseeable future, removing the threat of disease from 74 million people currently at risk. In these countries, malaria surveillance is of paramount importance and each malaria case should be investigated.

Higher-burden countries are making slower progress

Progress in reducing malaria has been slower in higher-burden countries, although some countries such as Papua New Guinea appear to be showing significant progress in reducing
Figure 2
Prevention, testing, and treatment coverage outside of Africa, 2000–2010

There have been large increases in the number of bednets (conventional ITNs and LLINs) delivered, while RDTs and ACT treatment courses were also scaled up. The number of people protected by IRS has not changed significantly.

**Figure 3**

**Reductions in malaria cases worldwide**

A total of 34 countries outside of Africa have reduced cases by more than 50% since 2000; another 4 have reduced cases by 25% or more.

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Parasite prevalence. Nonetheless, India, Indonesia, Myanmar, Pakistan, and Papua New Guinea still account for a relatively high number of cases and deaths. The slower progress may be related to smaller per capita investments in malaria control, as well as the difficulties of operating control programmes on a large scale.

Higher-burden countries will therefore need substantial financial resources and technical assistance to strengthen their health systems before they can visibly improve their malaria response. At their current pace, it is unlikely that they can achieve the malaria-specific Millennium Development Goals and the World Health Assembly target of reducing the malaria burden by at least 75% by 2015. Further progress cannot be attained without high-level political commitment and tight management of malaria control programmes.

**P. vivax is more challenging to control**

As malaria control programmes are intensified, the number of *P. falciparum* cases declines faster than that of *P. vivax*, requiring substantial adjustments to malaria control strategies.

*P. vivax* malaria is more challenging to control because the parasite is tolerant of a wider range of environmental conditions and can be transmitted by mosquitoes even before infected people develop symptoms. It is also more difficult to treat because the parasite may develop a dormant form residing in the liver. An individual infected with *P. vivax* may remain asymptomatic for months to years and then relapse. Dormant *P. vivax* parasites cannot be detected with existing diagnostic tests, meaning there may be a large reservoir of infected people who are unaware of their condition and are not counted in malaria surveillance systems until they relapse.
Another difficulty in treating *P. vivax* malaria is that liver-stage parasites can only be eliminated through a 14-day course of primaquine, which can produce serious side effects (hemolytic anaemia) in patients who have more severe forms of glucose-6-phosphate dehydrogenase (G6PD) deficiency. Testing for G6PD deficiency is currently technically challenging and relatively expensive; hence, many clinicians do not prescribe primaquine when the risk from taking the drug may exceed that from the disease.

**Emerging threats and obstacles to progress**

There are three major challenges that threaten the future of malaria control globally:

- The lack of adequate funding to further scale up malaria control and elimination efforts.
- Growing parasite resistance to antimalarial drugs.
- Emerging mosquito resistance to insecticides used on LLINs and in IRS programmes.

Containing drug and insecticide resistance is an urgent issue that is critical to preserving the most effective first-line therapies for uncomplicated malaria and maintaining the effectiveness of vector control interventions. WHO has issued global plans to tackle both challenges, assigning clear roles to all stakeholders, including governments, donor organizations, the research community, and industry. These strategies should be implemented in full to ensure that the massive prevention and control investments of the last decade are protected.

**1. Lack of adequate financing**

Since 2003, international funding for malaria control outside of Africa has risen from less than US$17 million in 2000 to US$300 million in 2010, primarily due to funding made available through the Global Fund to Fight AIDS, Tuberculosis and Malaria (Figure 4). In 2010, the Global Fund accounted for approximately 88% of international funding for malaria control outside of Africa. A further 8% of international funding was derived from the World Bank and another 2% from Australia.

This increase in funding was matched in some instances by increases in domestic spending by countries such as Bangladesh and Colombia (Figure 5). In November 2011, Brazil

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*The Global Fund obtains 90% of its donations from the United States, France, Germany, United Kingdom, Japan, European Commission, Canada, Italy, Bill & Melinda Gates Foundation, Spain, Netherlands, and Sweden.*
International funding for malaria control has seen a more than eight-fold increase since 2003 but still falls short of the amount required to achieve universal access to life-saving malaria prevention and control measures.

Funding from domestic sources is not guaranteed either and may be threatened because of the very success of malaria control; as malaria incidence decreases, governments often shift resources to other disease areas or other development priorities. Without the necessary resources, the loftier ambitions of malaria elimination and ultimate eradication cannot be reached.

2. Containing drug resistance

Artemisinin-based combination therapies (ACTs) are critical to the future of malaria control programmes worldwide. Quality-assured ACTs are recommended by WHO as the first-line treatment for uncomplicated *P. falciparum* malaria. Expanding access to these highly effective combination therapies has contributed significantly to recent advances against malaria, but progress is now
threatened by the emergence of artemisinin-resistant parasites in South-East Asia.

In recent years, *P. falciparum* resistance to artemisinins has been detected in four countries of the Greater Mekong subregion: Cambodia, Myanmar, Thailand, and Viet Nam. If resistance spreads to India or sub-Saharan Africa, the public health consequences could be dire, as no alternative antimalarial medicine is available with the same level of efficacy and tolerability as ACTs. Given the ever-increasing levels of population movement in Asia and the Pacific, the geographic scope of the problem could widen quickly, posing a health security risk for many countries in the region that have ongoing malaria transmission.

There is therefore a limited window of opportunity to avert a regional public health disaster, which could have severe global consequences. In January 2011, WHO released the *Global Plan for Artemisinin Resistance Containment* (GPARC), calling on all stakeholders to maximize efforts to protect the efficacy of ACTs. Despite WHO’s call to action, not enough is being done. Containment efforts in the Greater Mekong subregion have been effective where implemented, but efforts need to be strengthened and expanded.

This requires considerable investment in monitoring drug efficacy, improving access to diagnostics and quality-assured ACTs, scaling up basic prevention and control interventions to reduce malaria transmission, and increasing support for, and monitoring of, mobile and migrant populations. Governments should also take targeted regulatory measures to remove oral artemisinin-based monotherapies from markets, along with antimalarials that do not meet international quality standards.
The Greater Mekong subregion has long been the cradle of antimalarial drug resistance, and the spread of resistant parasites to India and Africa led to a dramatic rise in the global malaria burden in previous decades. The spread—or independent emergence—of artemisinin resistance in other parts of the world could again trigger a global resurgence of malaria-related illness and death, with major social and economic costs to societies.

Drug-resistance containment has major cost implications for the public health budgets of countries in the Greater Mekong subregion, and affected countries cannot fight this challenge alone. Increased international assistance would deliver significant savings in the long run, improving the sustainability and public health impact of malaria interventions globally. Most endemic countries outside of the Greater Mekong subregion also need additional resources to implement the GPARC’s recommendations and to prevent the emergence of drug resistance.

3. Managing insecticide resistance

In parallel with efforts to contain drug resistance, a coordinated response is needed to tackle emerging mosquito resistance to the insecticides used on LLINs and in IRS programmes. Existing vector control tools are still effective in the vast majority of settings, but resistance to at least one insecticide has now been reported from 64 countries with ongoing malaria transmission around the world; 24 of these countries are outside of Africa.

Insecticide resistance involves all major vector species and all classes of insecticides and has the potential to substantially weaken control programmes. Resistance to a class of chemicals known as pyrethroids seems to be the most widespread. The pyrethroids are not only highly effective, but are the least expensive of the four classes of insecticides available for public health vector control. They are the most commonly used chemicals for IRS and are currently the only class available for use on LLINs.

In May 2012, WHO released the *Global Plan for Insecticide Resistance Management in malaria vectors* (GPIRM), outlining the pillars of action required to confront and overcome this threat. The GPIRM calls on endemic countries, donor organizations, UN agencies, as well as research and industry partners, to implement a five-pillar strategy to tackle insecticide resistance and to facilitate the development of innovative vector control tools and strategies.

The five pillars are the following:

- Plan and implement insecticide resistance management strategies in malaria-endemic countries.
- Ensure proper, timely entomological and resistance monitoring and effective data management.
- Develop new, innovative vector control tools.
- Fill gaps in knowledge on mechanisms of insecticide resistance and the impact of current insecticide resistance management approaches.
- Ensure that enabling mechanisms (advocacy, human, and financial resources) are in place.

Most affected countries have not yet carried out adequate testing for insecticide resistance, which means that global understanding of the scale of insecticide resistance remains incomplete. To tackle this problem, the GPIRM also calls for the establishment of a global database on insecticide resistance to help malaria-endemic countries and donors take targeted action.
What needs to be done?

To achieve the ambitious global goals of reducing the needless loss of life due to malaria, and to further reduce the malaria burden outside of Africa, governments, development partners, and other stakeholders should focus their attention on six priority areas.

1. Bridge the funding gap. While more money is available for malaria control outside of Africa than ever before, these resources still fall short of the amount required for effective disease control. An unprecedented global fundraising effort is needed—mobilizing both existing and emerging donors—to ensure that all endemic countries move closer to elimination, marginalized populations are reached, and the efforts to contain drug and insecticide resistance are scaled up. It will also be critical that malaria-endemic countries benefiting from economic growth allocate more domestic resources to fight malaria, or the progress made in reducing malaria to date will be put at risk.

2. Increase technical assistance and knowledge transfers. To defeat malaria, many endemic countries will also need significantly more technical assistance to strengthen their malaria response. When requested, technical partners should scale up assistance to ministries of health to support them in their efforts to design, evaluate, and update national malaria control strategies and work plans. Development partners should continue to help ministries of health provide health worker training and strengthen human resources for health. Particular attention should be paid to the design of interventions that help reach vulnerable groups.

3. Provide universal access to preventive interventions. Greater efforts are needed to provide protection to all those at risk of malaria, particularly in the most populous countries with the greatest numbers of cases and deaths. Attainment of this goal will be particularly challenging for those communities that are mobile or live in remote border areas. In some situations, novel vector control methods may be needed, such as insecticide-treated hammocks to protect those who work and sleep in forests overnight, or insecticidal mosquito coils to protect against outdoor biting mosquitoes. As prevalence rates fall and remain very low in many areas, new approaches need to be developed to tackle the last remaining cases.

4. Scale up diagnostic testing, treatment, and surveillance. With the 2012 launch of WHO’s T3: Test. Treat. Track initiative, malaria-endemic countries and donors are urged to ensure that every suspected malaria case is tested, that every confirmed case is treated with a quality-assured antimalarial medicine, and that the disease is tracked through timely and accurate surveillance systems. Scaling up these three interconnected pillars will provide the much-needed bridge between efforts to achieve universal coverage with prevention tools and the goal of eliminating malaria. It will also lead to a better overall understanding of the distribution of the disease, and enable national malaria control programmes to most efficiently direct available resources to where they are needed. T3 scale-up will enable affected countries to deliver a better return on investment on malaria funding received from international donors.

5. Step up the fight against drug and insecticide resistance. The double threat of drug and insecticide resistance imperils recent gains in malaria prevention and control. Increased political commitment and new sources of funding will be needed to tackle these challenges. WHO has made global strategies available to address both drug and insecticide resistance. The Global Plan for Artemisinin Resistance Containment was released in January 2011, while the Global Plan for Insecticide Resistance Management in malaria vectors was issued in May 2012. These plans should be fully implemented by governments and stakeholders in the global malaria community to preserve the current tools of malaria control until new and more effective tools become available.
Contributions from the research community and industry partners will be fundamental to tackling these emerging threats.

6. Strengthen regional cooperation. Malaria can be defeated only if governments scale up regional cooperation efforts to strengthen the regulatory environment for pharmaceuticals and work together on removing oral artemisinin-based monotherapies and counterfeit medicines from markets. Countries also need to collaborate on managing the supply chain for malaria commodities and share information about drug and insecticide resistance patterns. In a world where malaria is increasingly confined to border areas—and where cross-border migration represents a major source of new malaria infection—regional cooperation is also critical for the development of cross-border strategies that are inclusive of marginalized populations.

Governments have already made a number of commitments in the UN General Assembly and the World Health Assembly, through the governing bodies of WHO regional structures, and through a range of regional cooperation platforms, such as the Union of South American Nations (UNASUR) and the Association of Southeast Asian Nations (ASEAN). However, stronger political commitment will be needed to provide universal access to all key malaria interventions and to move closer to malaria elimination. With malaria designated as one of the key priorities of the UN Secretary General’s five-year action agenda (2012–2017), there is an unprecedented opportunity to end the unnecessary suffering caused by this disease.

What can be gained?

The rewards for investing in malaria control and elimination—and for pursuing globally agreed-upon strategies—are potentially profound:

The burden of a senseless, avoidable tragedy can be lifted. Scaling up malaria control efforts has been proven to relieve some of the poorest, most
vulnerable populations of a significant illness that causes disruption to schooling and work and, at the worst, death. Reduced illness lowers avoidable health-care spending, increases productivity of workforces, provides a boost to tourism and has lasting socio-economic benefits.

**Considerable financial savings can be achieved both in endemic countries and globally.** Investing in the protection of the existing package of malaria control tools will result in significant savings in the long run, improving the sustainability and public health impact of malaria interventions, not only in affected countries but globally. If these efforts succeed, millions of lives can be saved and the challenges of drug and insecticide resistance can be overcome.

**Health systems can be strengthened.** Improving the malaria response—at both the national level and in larger regions—will boost the capacities of health systems to improve the treatment of other febrile illnesses and will help to direct financial resources where the funds are most needed. Strengthening health infrastructure and improving health information systems for malaria will strengthen countries’ overall capacities to respond to future public health threats, while also helping bridge existing health inequalities.

**Large areas of the world will be free from malaria in the foreseeable future.** Of the 51 malaria-endemic countries outside of Africa, 17 are in the pre-elimination or elimination stage of malaria control, poised to eliminate the disease soon—removing the threat of disease from 74 million people currently at risk (Figure 6). Further progress requires appropriate resourcing and tight management of malaria control programmes. Yet, if elimination is attained in these countries, it would represent a historic achievement—one to be remembered for decades to come—setting the course for the eventual eradication of this ancient scourge.

### Conclusion

There is an urgent need to reduce malaria incidence in higher-burden countries outside of Africa, and to help countries that are close to elimination to become certified by WHO as free of malaria. Appropriate and sustained financing is required to design and implement effective malaria control and elimination programmes that take into account the changing epidemiology of malaria and the spread of drug and insecticide resistance. To make this happen, broad political commitment is needed to implement strategies and foster partnerships that will help to achieve further progress. The malaria response will be judged in the near term by the reductions in malaria-related morbidity and mortality that are achieved, and in the long term by its durable contribution to overall health and development globally.
REFERENCES


Defeating malaria in Asia, the Pacific, Americas, Middle East and Europe