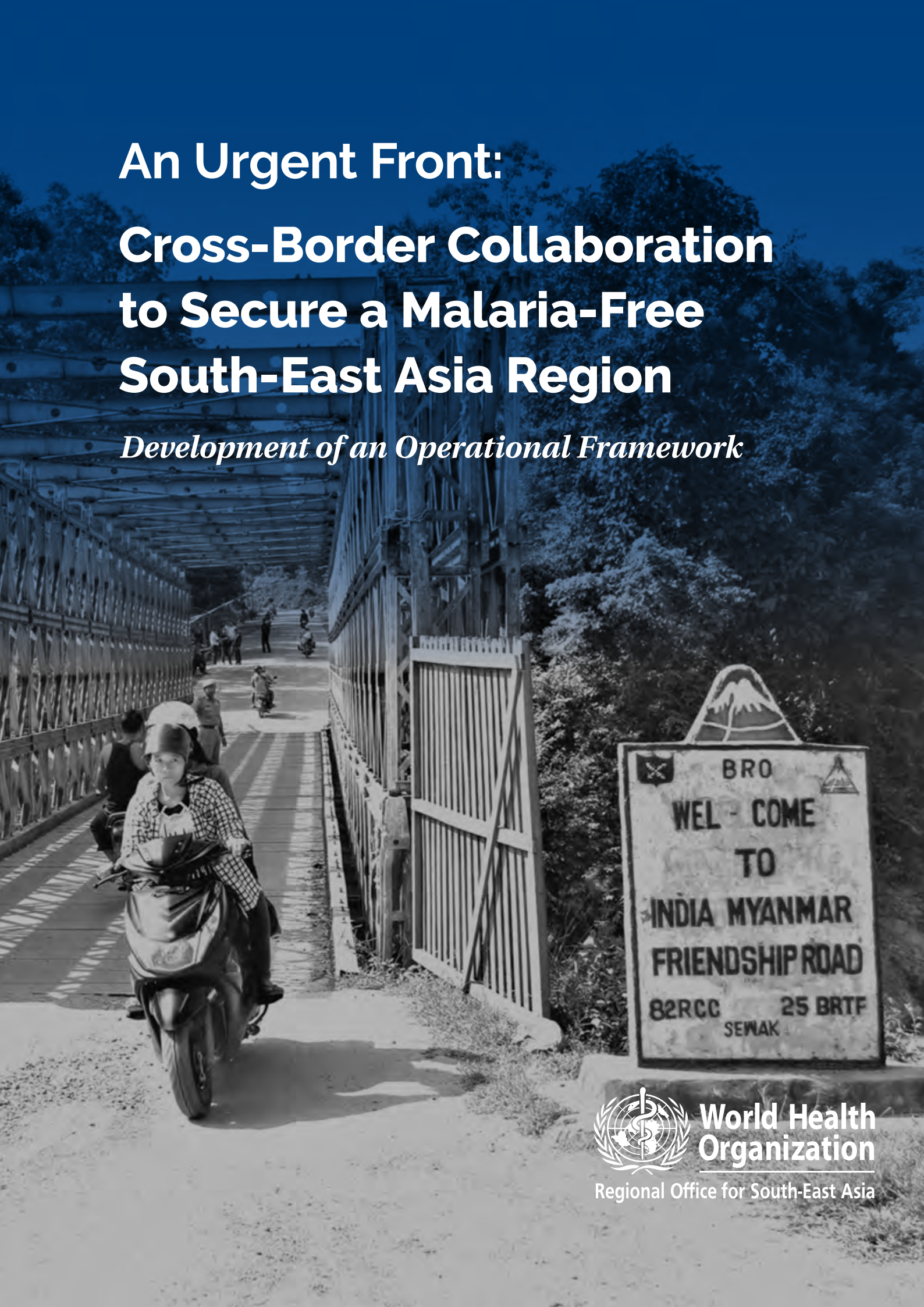
An Urgent Front:

Cross-Border Collaboration to Secure a Malaria-Free South-East Asia Region

Development of an Operational Framework



World Health Organization
Regional Office for South-East Asia

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Cover: India-Myanmar border. Kangla Online

Contents

Foreword

Commitment and drive to eliminate malaria across the WHO South-East Asia Region is stronger than ever. Since 2010 reported malaria cases have been halved. Malaria-related mortality has been reduced by 60%. In 2015 and 2016, respectively, WHO certified Maldives and Sri Lanka malaria-free. The Region aims to be completely rid of the disease by 2030 at the latest.

Despite our remarkable progress, achieving that goal will be a challenge. The South-East Asia Region remains the second-most malaria-affected Region in the world, with 1.35 billion people at risk of contracting the life-threatening disease. That includes several particularly vulnerable groups such as pregnant women, children, poor or disadvantaged communities, communities in border and conflict areas, and refugees and migrants.

As the following pages highlight, our ability to promote the health and wellbeing of these and other communities and achieve our goal of a malaria-free South-East Asia Region is dependent on recognizing and acting on a series of core truths.

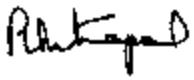
First, we face an urgent front: malaria does not respect national borders. If it is a menace to one country it is a menace to all. Second, the challenges of multi-drug resistance – especially in the Greater Mekong Subregion (GMS) – and mosquito resistance to pyrethroids, demand collective action. Even for countries that have achieved malaria-free status, imported cases pose a substantial threat. In countries that are nearing elimination, malaria importation, meanwhile, remains a significant factor in sustaining transmission. And third, the kind of cross-border action needed to eliminate malaria Regionwide is within our grasp, as demonstrated by the Region's achievement of polio-free status in 2014, which has been maintained to this day.

Importantly, Member States understand each of these truths. The Regionwide adoption in November 2017 of the Ministerial Declaration on Accelerating and Sustaining Malaria Elimination in the South-East Asia Region, alongside the unanimous adoption in May 2018 of the Ministerial Call for Action to Eliminate Malaria in the GMS before 2030, is demonstrative, and represents the high-level resolve needed to defeat malaria once and for all Regionwide.

WHO South-East Asia has been active towards this end. In recent years a series of cross-border consultations for the control of malaria, alongside other communicable diseases, have been held. The Mekong Malaria Elimination Programme, a GMS countries-owned and WHO-led initiative supported by multiple partners, has meanwhile fought with keen resolve to contain multi-drug resistance, working with Member States across two WHO regions, and in some of the world's most intrepid, hard-to-reach areas.

Our understanding of the challenges faced are more comprehensive than ever. As the following Framework details, lessons have been learned and specific recommendations generated, both at the national and regional level. Among other key interventions recommended, this includes a greater exchange of malaria surveillance data, including cross-notification, as well as the prioritization of responses and interventions according to real-time, on-the-ground epidemiological realities.

As before, we are once again at a crossroads in our quest to lift the burden and eliminate malaria from affected communities. But as the Operational Framework demonstrates, we now know what is needed to walk the extra mile – to push forward with our commitments, to seize the opportunities we have, and to realize a malaria-free South-East Asia Region.



Dr Poonam Khetrapal Singh
REGIONAL DIRECTOR
WHO SOUTH-EAST ASIA REGION

Abbreviations

API	Annual Parasite Incidence per 1000 population
APLMA	Asia Pacific Leaders Malaria Alliance
APMEN	Asia-Pacific Malaria Elimination Network
ASEAN	Association of Southeast Asian Nations
BBINS	Bangladesh, Bhutan, India, Nepal, Sri Lanka
BBINS+M	Bangladesh, Bhutan, India, Nepal, Sri Lanka plus Myanmar
BCC	behaviour change communication
CI	case investigation
CMPE	Center for Malaria, Parasitology and Entomology
ERAR	emergency response to artemisinin resistance
ERG	Evidence Review Group
FI	focus investigation
GFATM	Global Fund to fight AIDS, TB and Malaria
GMP	Global Malaria Programme
GMS	Greater Mekong Subregion
GTS	Global Technical Strategy
IHR	International Health Regulations
IOM	International Organization for Migration
IRS	indoor residual spraying
LLIHN	long-lasting insecticidal hammock net
LLIN	long-lasting insecticidal net
LSM	larval source management
M&E	monitoring & evaluation
MBDS	Mekong Basin Disease Surveillance Project
MGC	Mekong-Ganga Cooperation
MME	Mekong Malaria Elimination

MoU	memorandum of understanding
NGO	nongovernmental organization
NMCP	National Malaria Control Programme
P.	Plasmodium
RAI	Regional Artemisinin-resistance Initiative
RAI2E	Regional Artemisinin Initiative2-Elimination
SAARC	South Asian Association for Regional Cooperation
SDG	Sustainable Development Goal
SMS	short message service
SOP	standard operating procedure
TB	tuberculosis
TES	therapeutic efficacy studies
UHC	universal health coverage
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Vlad Sokhin. WHO

Executive summary

Malaria does not respect national borders, which means that no country can achieve and sustain malaria elimination in isolation. The persistence of malaria in border areas – as well as more generally in neighbouring nations – has become of critical concern, as increasing numbers of Member States of the South-East Asia Region move closer to eliminating malaria, while significant burdens of malaria persist in others.

The first, contextual section of this document "An era of opportunities, challenges and commitments" lays out why this issue has come to the forefront today, requiring the attention and commitment of the Region's Ministers of Health, other relevant ministries and senior administrators.

This first section spotlights the commitments already made by the Region's Ministers of Health to tackling this challenge, notably in the *2017 Ministerial Declaration on Accelerating and Sustaining Malaria Elimination in the South-East Asia Region* and the 2018 *Ministerial Call for Action to Eliminate Malaria in the Greater Mekong Subregion before 2030.* It emphasizes that it is fully possible to tackle malaria in border areas and elsewhere through stepped-up domestic efforts as well as effective cross-border collaboration. The Region's Member States have already successfully undertaken such efforts in eliminating polio from their nations, as a result of which the Region has been polio-free since 2014.

An operational framework is detailed in the second section. Guided by the overarching vision of achieving a "Malaria-free South-East Asia Region by 2030" and achievement of the Sustainable Development Goals, this operational framework focuses on helping Member States to:

- prevent and/or reduce transmission and disease burden with special emphasis on minimizing risk of importation of malaria cases;
- prevent, and/or rapidly respond to, and control malaria epidemics; and
- prevent re-establishment of malaria transmission..

Detailed guidance is provided on every aspect relevant to tackling malaria through cross-border collaboration, including sharing of surveillance data, prioritization of responses and interventions according to epidemiological scenarios, key fronts for leadership and governance and monitoring and evaluation. Proposed milestones and targets for the next 3 years and the next steps are also clearly delineated.

A wealth of relevant material is provided in the comprehensive annexes, which will be of use to policy-makers, implementers and partners. Annex 1 provides country-specific details about the malaria burden and response in border areas; Annex 2 focuses on key considerations for maximizing impact in border areas; and Annex 3 details past and ongoing efforts to tackle malaria in border areas and through cross-border collaboration.

Minister of Health and Family Welfare, India, signing the South-East Asia Region ministerial declaration on malaria elimination, 29 November 2017. WHO

1

Context: an era of opportunities, challenges and commitments

Context: an era of opportunities, challenges and commitments

1.1 Opportunities

The 11 countries comprising WHO's South-East Region have made substantial progress in tackling malaria, recording a 46% reduction in reported cases alongside a 60% decrease in reported deaths between 2010 and 2016. Maldives and Sri Lanka were certified as malaria-free in December 2015 and September 2016, respectively. Bhutan aims to eliminate malaria by 2018, having brought down its malaria burden to 18 locally transmitted and 56 imported cases in 2016. Timor-Leste had 94 indigenous cases in 2016. All the countries of the Greater Mekong Subregion (GMS) have redoubled their commitment to eliminating malaria in response to the serious multidrug resistance situation. Both Nepal and the Democratic People's Republic of Korea are reorienting their programmes towards elimination.

1.2 Challenges

Despite this progress, an estimated 1.35 billion people in the South-East Asia Region remain at some risk of malaria, accounting for nearly half of the global at-risk population. In 2016, three countries accounted for 97% of reported cases in the Region: India (74%), Indonesia (15%) and Myanmar (8%). Fifty nine percent of reported deaths in the Region occurred in India and 29% in Indonesia.

The proportion of cases due to *Plasmodium falciparum (P. falciparum)* varies greatly within the Region, ranging from >90% in Bangladesh to 0% in the Democratic People's Republic of Korea, where cases are exclusively due to *P. vivax*. The Region accounted for 58% of *P. vivax* cases globally.

Malaria does not respect national borders, which means that no country can achieve and sustain malaria elimination in isolation. The persistence of malaria in border areas – as well as more generally in neighbouring nations – has become of critical concern, as increasing numbers of Member States of the South-East Asia Region move closer to eliminating malaria, while significant burdens of malaria persist in others.

Malaria in border areas and neighbouring nations poses a number of particular challenges.

Epidemic upsurge is not infrequent in the border areas. Areas with high endemicity have a high potential for spread across borders, while some low endemicity areas have potential for outbreaks.

Health and other complementary social/welfare services along international borders are typically weaker and more poorly staffed than in more central areas, in part because some of these areas may be chronically affected by security concerns and tensions. Moreover, many of the people living in border areas, especially in remote ones, are from socioeconomically vulnerable minorities. Such people are often disadvantaged in terms of access to health care and social services, and in numerous instances they lack citizenship rights. These major structural constraints affect all aspects of malaria elimination efforts, including timely prevention, diagnostic testing and treatment, surveillance, monitoring and evaluation (M&E), epidemic forecasting and rapid response capacity to prevent and contain outbreaks and resurgences.

Another set of challenges stem from the use of often widely differing treatment regimens and vector control practices and timelines in neighbouring countries. These programmatic differences are often widest in the border areas of the South-East Asia Region. National protocols for tackling drug and insecticide resistance often vary widely between neighbouring nations. Timely epidemiological data on the malaria situation in border areas is typically weak or even absent altogether. Another chronic challenge is posed by very limited inter-country, cross-border cooperation and collaboration on malaria elimination, most so in sensitive border areas.

The challenges are multiplied by the enormous variation and complexity of the Region's present malaria epidemiology, as detailed in Annex 1, with many countries approaching elimination while others continue to have significant malaria burdens.

All these challenges must be overcome to achieve the goal of a malaria-free South-East Asia Region by 2030. Recent outbreaks of malaria in countries that had hitherto been malaria-free, and resurgences in countries that had made important progress in reducing malaria morbidity and mortality rates in the past decade, highlight the ever-present threat of re-establishment and resurgence across borders.

There is clear evidence that the Region's Member States can successfully tackle such collaborative challenges – the Region's recent great success in eliminating poliomyelitis involved intensive border-area efforts alongside sustained cross-border collaboration.

The progress made in tackling malaria in border areas can be seamlessly translated into tackling and eliminating other diseases.

High-level participants at a roundtable on accelerating elimination of malaria in the South-East Asia Region, New Delhi, 29 November 2017. WHO

1.3 Commitments

The Region's Ministers of Health have resolutely committed to eliminating malaria by the year 2030 or earlier, specifically emphasizing their determination to undertake effective cross-border collaboration to tackle the challenges posed by malaria in border areas and neighbouring nations.

In the 2017 *Ministerial Declaration on Accelerating and Sustaining Malaria Elimination in the South-East Asia Region*, they emphasized that "universal access means that our national malaria programmes will provide all vulnerable and at-risk populations – including the disadvantaged communities, communities in border and conflict areas, and refugees and undocumented migrants – with free or affordable prevention (including long-lasting insecticidal nets or indoor residual spraying), diagnosis and treatment services" and that they would ensure "inter-regional collaboration and coordination on every aspect of the elimination efforts, including sharing of information on core surveillance of malaria cases and drug- and insecticide-resistance on a real time basis, capacity building, research and complementary cross-border responses with the support of WHO".

In the 2018 *Ministerial Call for Action to Eliminate Malaria in the Greater Mekong Subregion before 2030*, the commitments included the following:

"… 3. IMPLEMENT a multi-sectoral response in every country to ensure that policies are effectively translated into time-bound, result-oriented actions at every level of administration, with ownership and access to real-time monitoring and collaboration across borders ensuring information exchange and joint actions along borders where required;

4. ENABLE, using innovative communication tools to engage and promote health literacy among communities on malaria elimination, and provide – as part of Universal Health Coverage (UHC) – the best possible prevention, diagnosis and care to all persons at risk of malaria, including development project sites, hard to reach areas and international borders with at risk populations;...

… 8. WORK together with relevant entities as a sub-region to:
a. Develop and implement cross-border elimination strategies and action plans that concretely address the malaria-related needs and challenges of populations at risk of malaria living in border areas and cross-border mobile and migrant populations;...
c. Exchange core surveillance data on malaria, including but not limited to imported or cross-border malaria cases and drug resistanceresistance; ...".

China-Myanmar joint malaria control activities in Myanmar. Yunnan Institute of Parasitic Diseases, China

2

An operational framework for cross-border collaboration for a malaria-free South-East Asia Region

Myanmar-Thailand border. Amelie Joubert

An operational framework for cross-border collaboration for a malaria-free South-East Asia Region

Guided by the overarching vision of achieving a "Malaria-Free South-East Asia Region by 2030" as well as achieving the Sustainable Development Goals (SDGs), this operational framework focuses on helping Member States to:

- prevent and/or reduce transmission and disease burden, with special emphasis on minimizing risk of importation of malaria cases;
- prevent, and/or rapidly respond to, and control malaria epidemics; and
- prevent re-establishment of malaria transmission.

This Framework is in alignment with the *Global Technical Strategy for Malaria 2016–2030, Regional Action Plan 2017–2030 Towards 0. Malaria-Free South-East Asia Region, Regional Action Framework for Malaria Control and Elimination in the Western Pacific 2016–2020, Strategy for Malaria Elimination in the Greater Mekong Subregion (2015–2030), as well as the Action and Investment to defeat Malaria 2016–2030 (AIM) – For a Malaria-Free World.* This Framework needs the commitment of relevant ministries in Member States and can be used to leverage donor financing for cross-border collaborative activities.

2.1 The Framework

The following objectives are central to this Operational Framework:

- **Maximize access to malaria interventions in border areas (within national boundaries)**
  - Ensure universal access to quality-assured malaria diagnosis, treatment and prevention for all those at risk irrespective of their national origin or status, with emphasis on equity (e.g. migrant and mobile populations and other key and vulnerable populations) as part of the universal health coverage (UHC) packages. This should be supported by an uninterrupted supply of quality-assured commodities, maximizing utilization of health systems for planning, service delivery and reporting including through community and civil society engagement, and strengthening of those systems along the border areas.
  - Undertake essential, mutually agreeable cross-border collaborative activities such as synchronized and/or complementary approaches directed at intensified control, elimination, or prevention of re-establishment tailored to the local context.
  - Implement a package of interventions for identified and prioritized areas such as "epidemiological clusters/blocks" or "special intervention zones" based on epidemiological scenarios.

○ Maximize malaria surveillance and response as well as M&E in border areas

- Undertake periodic national and local situation analyses.
- Ensure rapid maturity of country surveillance systems to case-based surveillance to allow timely identification of imported cases and sources of transmission; notification and exchange of information at different levels (adjacent/non-adjacent border areas) and periods (periodic and/or real time basis); and event-based cross-border notification (outbreaks, increases in vulnerability/receptivity, etc.).
- Ensure effective, appropriate follow-up of and response to individual malaria cases crossing international borders.
- Implement prioritized coordinated annual action plans at sub-national levels based on essential, mutually agreeable cross-border activities, such as synchronized and/or complementary approaches geared towards intensified control, elimination or prevention of re-establishment tailored to the local context.
- Establish a regional cross-border malaria data-sharing and visualization platform for complementary action in response to active transmission across borders, including harmonization with the existing one in GMS countries.
- Establish and agree upon a regional M&E framework.
- Review progress on cross-border collaboration for malaria elimination by careful reporting to the national and regional committees.

○ Maximize cross-border coordination mechanisms that provide an enabling environment

- Coordinate and synchronize malaria intervention policies, strategies, work plans and activities in affected areas on both sides of a common border, where possible.
- Initiate or use existing high-level action, e.g. empowered national malaria elimination task forces (or similar bodies) including but not restricted to memoranda of understanding (MoUs) between bilateral email groups/working groups/district-level coordination committees, with the aim of creating an enabling environment for local action.
- Initiate or revitalize existing regional coordination mechanisms for cross-border collaboration, including subregional coordination activities.
- Enhance joint capacity building and implementation research, e.g. new models of cross-border interventions such as border posts, health cards, etc.
- Collaborate with other existing cross-border mechanisms, organizations and sectors including communities and civil society networks.

2.2 Proposed milestones and targets

A suggestive list of milestones and targets (2018–2020) in reference to the objectives of this Framework is given below. These are expected to be taken into consideration by Member States when strategizing and developing action plans for cross border collaboration.

By 2018

- Ministries of health in all Member States accord high priority to the elimination of malaria along border areas by endorsing and adopting this Framework for cross-border collaboration – prepared as a supplementary document for operationalizing the 2017 *Ministerial Declaration on Accelerating and Sustaining Malaria Elimination in the South-East Asia Region* and the 2018 *Ministerial Call for Action to Eliminate Malaria in the Greater Mekong Subregion before 2030* – and develop country-specific, costed and measurable action plans embedded within their annual action plans.
- Member States agree to establish a regional data visualization platform under the technical stewardship of World Health Organization (WHO) to facilitate action in response to active malaria transmission across borders, and all Member States agree to the web-based exchange of data on malaria cases (imported and indigenous) as well as drug and vector resistance.
- Member States agree to form a national malaria elimination task force (or similar body), or in Member States which have progressed further towards malaria elimination, to establish an independent national malaria elimination advisory committee involving relevant non-health ministries and sectors, which will also address cross-border issues and actions.
- Member States identify focal points at national, provincial, state and district levels for cross-border collaboration on malaria elimination.
- Member States undertake situation analyses and draw baselines relating to the malaria situation in border areas, including mapping of population mobility.
- Member States seek resources for the above.
- WHO should be:
    - supporting Member States in operationalizing cross-border collaboration on malaria;
    - supporting the establishment of a regional web-based cross-border platform for sharing of malaria surveillance data by Member States as an initial step towards operationalization;
    - facilitating meetings of technical experts and programme managers from Member States to finalize joint action plans and operational guidelines, and compile the same into a regional cross-border action plan 2018–2020;
    - garnering support of partner agencies.

Bangladesh-India border. Shampa Nag/Caritas India.

By 2019

- Member States pursue high-level action, including but not restricted to MoUs, with the aim of creating an enabling environment for local action.
- Member States include detailed and costed cross-border actions in national malaria plans, based on this Framework.
- Member States develop and implement joint action plans with relevant neighbouring countries (at sub-national/adjacent district levels) in priority border areas/intervention zones. This especially pertains to sharing of malaria data through common data-sharing platforms, including dashboards.
- Member States establish or strengthen surveillance systems to implement case-based malaria surveillance and mapping of active transmission foci in border areas, where applicable.
- Member States establish functioning cross-border notification, especially in the event of a surge in cases, emergence of specific resistance, etc.
- Member States review progress and impact through its malaria elimination task force (or similar body).
- WHO would support Member States in developing joint cross-border action plans, guidelines/standard operating procedures (SOPs), M&E plans, MoUs, tools, etc.
- Regional/subregional mechanism/s need to be established, with role of WHO defined.

By 2020

- Mechanisms for collaboration in border areas continue to strengthen, and complementary responses implemented where required, including the following:
  - monitoring of cases in border areas using new IT platforms and data dashboards;
  - exchange of data on drug and insecticide resistance in addition to routine data;
  - establishment of networks at sub-national administrative levels with regular network meetings being held;
  - joint capacity building and research;
  - collaboration with existing cross-border mechanisms, organizations and sectors progresses;
  - policies in place for addressing cross-border mobile and migrant populations;
  - evaluation of specific malaria cross-border interventions, e.g. border posts, twin city programmes, patient cards, etc.;
  - secured funding for cross-border actions.
- Bhutan and Timor-Leste achieve their malaria elimination targets.
- Maldives and Sri Lanka continue to prevent re-establishment of malaria transmission.
- The remaining South-East Asia Region Member States continue to accelerate malaria elimination efforts through reduction of the malaria burden in targeted border areas.

Guiding principles

- Translation of political commitment into action on the ground.
- Ensuring an objective-driven approach founded on evidence.
- Ensuring that policy-makers/decision-makers/donors and partners throughout the South-East Asia Region recognize the need to accelerate cross-border malaria elimination as a priority, in order to contribute to the goal of a malaria-free South-East Asia Region by 2030 and to support achievement of the SDGs.
- Ensuring universal access to quality-assured malaria diagnosis, treatment and prevention for all those at risk irrespective of their origin or status, with emphasis on equity, e.g. migrant and mobile populations and other key and vulnerable populations, as part of the UHC packages. This needs to be supported by an uninterrupted supply of quality-assured commodities, maximizing utilization of health systems for planning, service delivery and reporting and strengthening those systems along the border areas.
- Emphasis on a regional data sharing platform for border areas as the core of context-specific surveillance and response, with special emphasis on disaggregated epidemiological analyses for: (i) cases reported across borders, e.g. Bhutan–India; and (ii) transnational cases (reported from away from border), e.g. India–Nepal, India–Sri Lanka, to define "epidemiological clusters/blocks".
- Robust management of every focus along the border areas.
- Establishing information and reporting systems as part of strengthening of surveillance systems to rapidly detect, investigate and respond to malaria cases and malaria foci, and to implement entomological surveillance systems in order to accelerate progress towards elimination.
- Acceleration of cross-border actions for epidemiological blocks/clusters within the elimination agenda through combinations of interventions adapted to the countries' conditions and by responding to local needs and priorities.
- Country led and country owned actions, through inclusive multisectoral approach with active involvement of all sectors and communities.
- Establishing or strengthening regional mechanisms for collaboration, including subregional and local coordination, with the aim of fostering an enabling environment.
- Fostering south-to-south collaboration.
- Strengthening and scaling up partnerships with relevant actors for harmonized actions and better resource sharing.
- Capacity building and implementation research on cross-border actions towards maximizing progress towards elimination.
- Harnessing innovation and best practices from other disease programmes.

2.3 Prioritization of key responses and interventions

Understanding possible epidemiological scenarios in terms of cross-border pairs ("epidemiological blocks/clusters") can help in determining the specific objectives and intervention packages that apply to each scenario, based on the past and current intensity of transmission in an area, the degree of resistance to different antimalarial drugs, and the size and mobility of affected populations (Table 1 and Fig. 1):

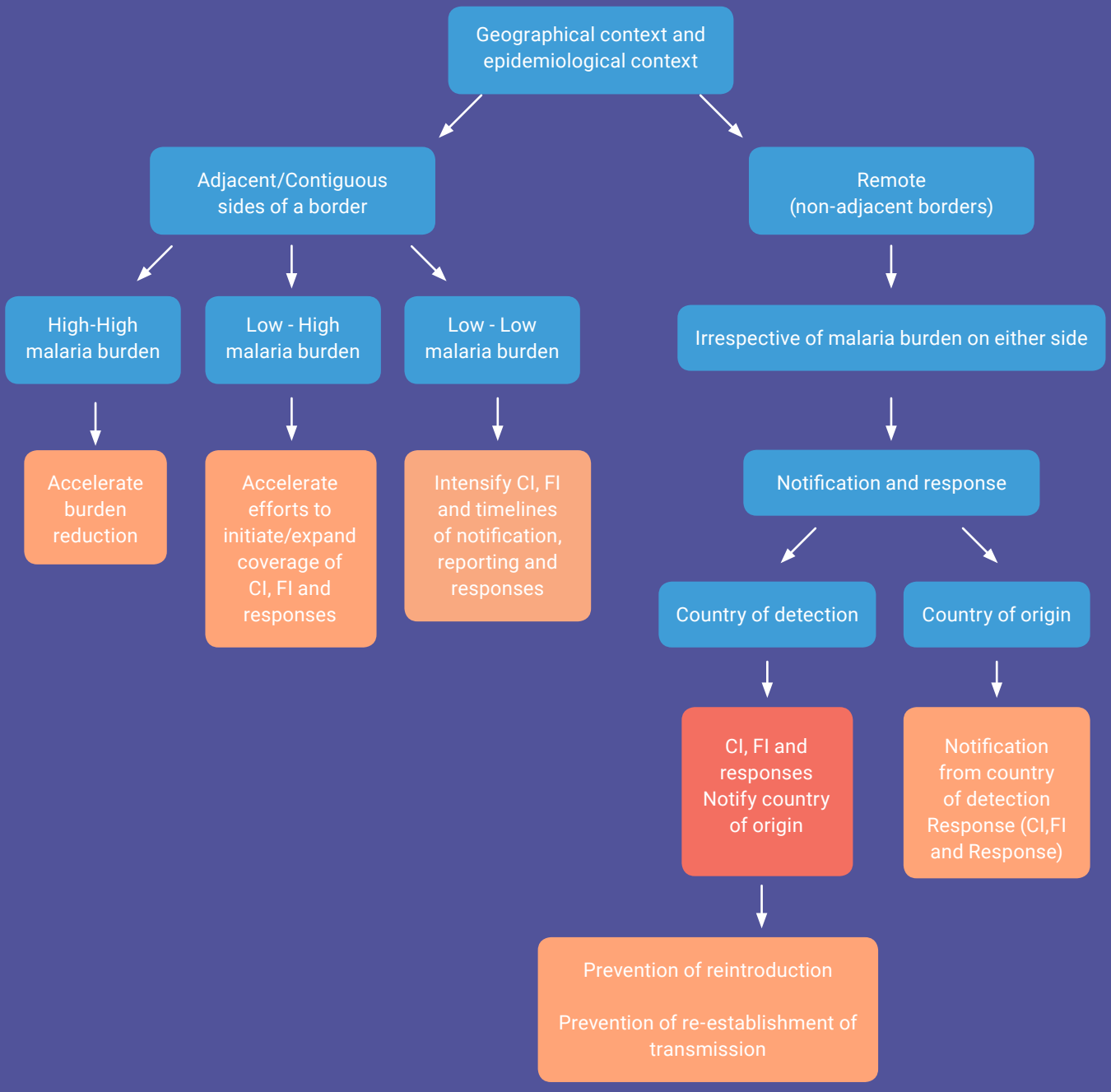
- **Scenario 1:** Administrative units/special intervention zones on both sides of an international border with low malaria burden situation (elimination).
- **Scenario 2:** High to moderate burden in an administrative unit on one side of an international border, and low malaria burden (elimination) in an administrative unit in the neighbouring country.
- **Scenario 3:** Administrative units on both sides of an international border with high to moderate malaria burden.
- **Scenario 4:** Imported malaria in countries with non-adjacent borders.

Table 1: Prioritization of key responses/interventions by cross-border pairs

	Malaria burden	Proposed prioritization
Scenario 1	Administrative units on both sides of an international border with low malaria burden (elimination)	Real time surveillance and response
Scenario 2	Country A with high to moderate malaria burden Country B with low malaria burden	Reduction in transmission levels as soon as possible Prevention of re-introduction of malaria (considering vulnerability and receptivity risks)
Scenario 3	High to moderate malaria burden on both sides of an international border	Accelerated intensified burden reduction on both sides with timeline targets for reduction of API (i.e. API<1) and readiness for elimination
Scenario 4	Imported malaria in countries with non-adjacent borders	Public health system to ensure that all imported malaria cases are identified, reported and responded to promptly, with the ability for rapid response to a single case, a cluster of cases or an epidemic

API – annual parasite incidence per 1000 population
Source: Addressing the challenge of controlling malaria across international border lines: framework for a South Asia subregional cross-border collaboration network to eliminate malaria. Geneva: World Health Organization; 2017

Fig. 1: Schematic diagram outlining key malaria interventions in cross-border pairs



CI: case investigation; FI: focus investigation

Source: Addressing the challenge of controlling malaria across international border lines: framework for a South Asia subregional cross-border collaboration network to eliminate malaria. Geneva: World Health Organization; 2017

2.4 Key leadership and governance areas

It is of vital importance for Member States to develop a policy environment that facilitates effective cross-border collaboration for eliminating malaria. This should be operationalized at national and local levels through formal or informal mechanisms.

At the national level

Political commitment at the highest level, driven by ministers of health. It is important that national authorities and provincial/state authorities as appropriate have ownership of cross-border collaboration. A national multisectoral task force should be constituted.

- Political commitment at the highest level, driven by ministers of health. It is important that national authorities and provincial/state authorities as appropriate have ownership of cross-border collaboration. A national multisectoral task force should be constituted.
- Leadership from ministers of health in terms of signing time-bound MoUs with neighbouring countries to ensure effective cross-border efforts on malaria elimination.
- Civil administration should be also involved for effective implementation of malaria elimination activities.
- Establish bilateral committees for agreed areas of work.
- Identify national, state and district focal points.
- Strengthen mechanisms for regular visits of focal points.
- In complex situations (such as domestic or international conflict) there must be a mutually trusted third party to facilitate agreement and possibly coordinate implementation.

At the local level

- Enhance active surveillance in remote areas with active involvement of civil society organizations (CSOs)/others. Malaria posts, camps and mobile clinics could be organized to increase access to services.
- Encourage intersectoral collaboration including nongovernmental organizations (NGOs), military and paramilitary, civil administration, other disease programmes and non-health departments, etc. where feasible. Collaborate with other existing cross-border mechanisms, organizations and sectors.
- Encourage responsible involvement of the private sector including local businesses, based on national programme guidelines and reporting requirements.
- Encourage joint capacity building and implementation research, e.g. new models of cross-border interventions such as border posts, etc.
- Convene and coordinate relevant committee meetings and timely, quality implementation and reporting. Establish district-level coordination committees or ensure border malaria is a priority agenda in existing coordination mechanisms.

At the subregional/regional/international level

Political commitment at the highest level, driven by ministers of health. It is important that national authorities and provincial/state authorities as appropriate have ownership of cross-border collaboration. A national multisectoral task force should be constituted.

- Member States should commit resources from domestic budgetary sources as well as seek to mobilize resources from funding agencies like the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), Asian Development Bank, Asia Pacific Leaders Malaria Alliance, the Bill and Melinda Gates Foundation, WHO, etc. and public–private partnerships.
- Use existing regional coordination mechanisms or initiate new ones. Establish a mechanism for cross-border collaboration including related subregional coordination activities (meetings, identifying resources and gaps, etc.).
- Collaborate with other existing cross-border mechanisms, organizations and sectors to support coordination between the programmes and their implementing partners, and/or establish a regional coordinating mechanism under the aegis of WHO with agreement from Member States. (Member States have previously expressed the need for such mechanisms, especially in South Asia). This mechanism should promote the development of joint work plans as well as joint cross-border missions and joint responses to confirmed outbreaks and transmission foci, where appropriate. Special emphasis should be placed on providing services to vulnerable/marginalized populations, including through the provision of cross-border support managed by international NGOs where appropriate.
- Member States should contribute to regional/subregional data platforms to store and disseminate surveillance data, and strengthen cross-border surveillance and response.

At the WHO Regional Office for South-East Asia level

- WHO should provide technical support to Member States in formulating national strategic plans/frameworks for cross-border collaboration that dovetail with those of neighbouring Member States.
- WHO should play a key role in providing technical support for guidelines, SOPs and exchange of information. A dedicated regional hub on border areas and cross-border collaboration could be established for this purpose. WHO should support a regional coordination mechanism for Member States, if requested by them.
- WHO should periodically support and lead evaluation missions to review and improve the performance of border-area and cross-border strategies and implementation.

2.5 Monitoring & evaluation for measuring progress and impact

M&E is of critical importance for tackling malaria in border areas. Data should be routinely shared through agreed platforms.

The guiding principles for M&E include:

- a logical framework (input–process–output–outcome–impact) applied to M&E;
- M&E to follow established standards, ensuring quality, reliability, transparency and usefulness;
- baseline data, if not available;
- appropriate M&E indicators that are specific, measurable, achievable, realistic and time bound, and aligned with international and national ones (each Member State has a set of indicators for malaria high-burden and elimination settings, from which the ones relating to cross-border malaria should be selected to avoid any additional burden to Member States regarding collation of data);
- standard data sources and approaches used for data collection, collation and analysis (tools and reporting formats should be based on those used in the national programmes or developed for regional/global strategy/frameworks);
- joint supervisory visits and review meetings at local level carried out at regular frequencies to review experiences and make modifications as needed;
- periodic independent reviews and modifications are of crucial importance, which should feed into the overall programme reviews.

Assam/India. Atul Loke/WHO

2.6 Opportunities

In and through the process of operationalizing the Framework, regional and in-country opportunities would be leveraged and convergence/harmonization efforts would also be made for cost effectiveness, improved resource sharing and precluding duplication of efforts. Potential opportunities include, but are not limited to the opportunities listed below.

- involvement of regional associations, viz. Association for South East Asian Nations (ASEAN), South Asian Association for Regional Cooperation (SAARC);
- the Mekong-Ganga Cooperation (MGC) initiative by six countries—specifically, India and the five ASEAN countries of Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam;
- in response to a request in World Health Assembly Resolution 70.15, WHO issued a global call for information including case studies on current policies, practices and lessons learnt in the promotion of refugee and migrant health;
- Member States adopting UHC and International Health Regulations (IHR 2005) advocated as the way forward by WHO;
- participation by Member States in compiling country and cross-border information for meeting of WHO Evidence Review Group (ERG) on border malaria under the WHO Global Malaria Programme;
- recognition of and action for cross-border collaboration as a critical element in the pathway to malaria elimination by partners, e.g. United Nations (UN) agencies, bilateral agencies, Asia-Pacific Leaders' Malaria Alliance (APLMA), Asia-Pacific Malaria Elimination Network (APMEN), Malaria Elimination Initiative, President's Malaria Initiative, Bill & Melinda Gates Foundation, Asian Development Bank, the Global Fund and others including non-profit organizations/CSOs and private sectors and research/academic institutions;
- success stories from other programmes, such as elimination of poliomyelitis.

Vlad Sokhin/WHO

3 Next steps

Next steps

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Annexes

Annex 1 – Malaria along borders in the South-East Asia Region: current epidemiological situation and a review of existing collaborative approaches and mechanisms

An overview of the current malaria situation in border areas as well as existing collaborative approaches and mechanisms is presented here, analysed by broad geographical areas within South-East Asia Region, specifically: (i) within South Asia; and (ii) beyond South Asia. All data presented are based on data from the year 2016 reported by Member States to WHO for World Malaria Report 2017.

Malaria is endemic in nine of the 11 countries in the South-East Asia Region, accounting for nearly 70% of the burden outside the WHO African Region. Nearly 63% of the cases are due to *P. falciparum*. India and Indonesia accounted for 74% and 15% of the reported cases, and 59% and 29% of malaria deaths in 2016, respectively. Eight of the nine countries with endemic malaria are on target to achieve a ≥40% reduction in case incidence by 2020 as compared with 2015. Malaria deaths in the Region decreased from 1403 in 2010 to 557 in 2016 (60% reduction). Maldives and Sri Lanka – certified as malaria free in 2015 and 2016, respectively – have maintained their malaria-free status. Table A1.1 presents an overview of confirmed malaria cases and deaths in the South-East Asia Region countries in 2016.

Table A1.1: Malaria reported confirmed cases and malaria-related deaths in the countries of the South-East Asia Region, 2016

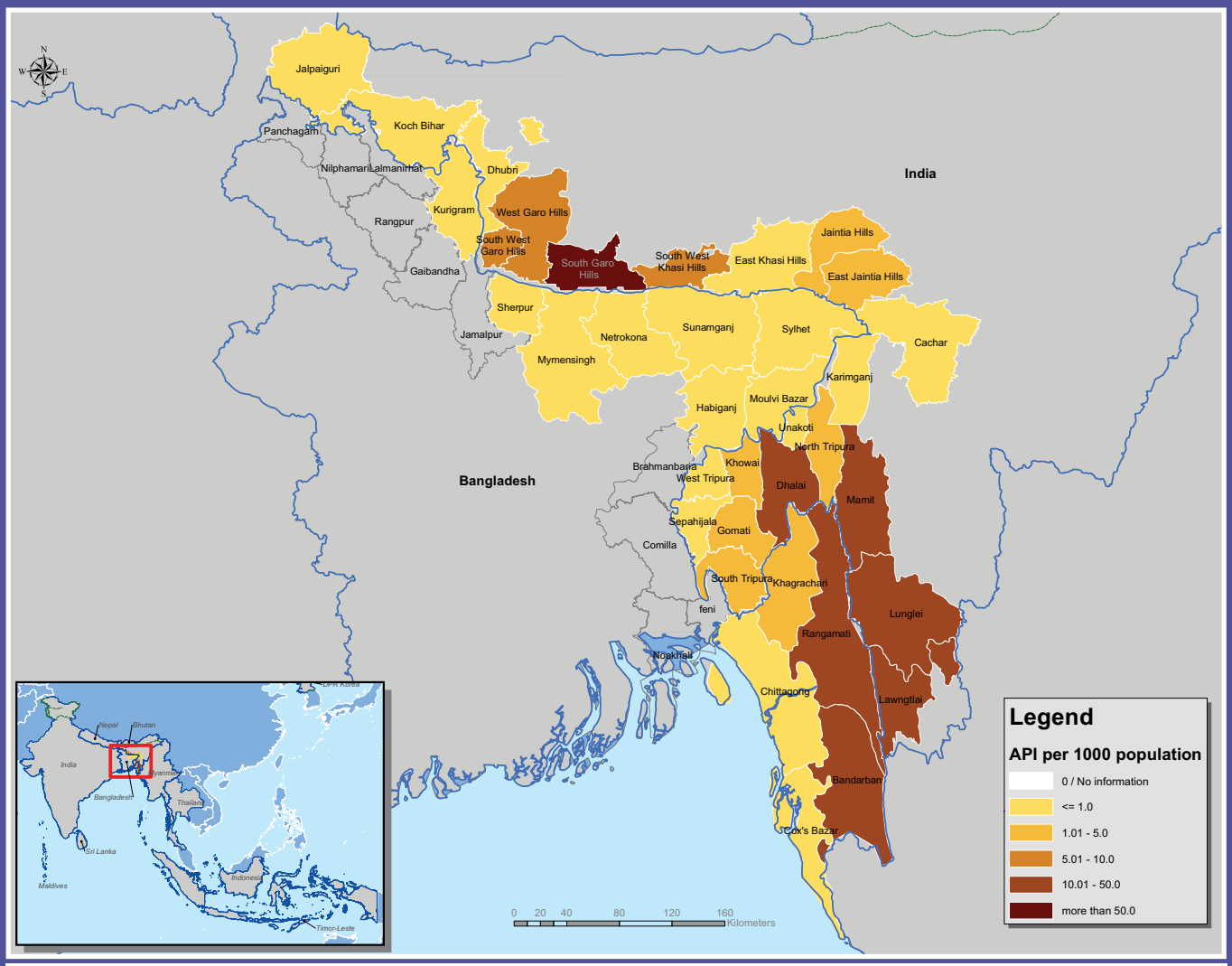
COUNTRY	CASES		DEATHS	
	Number	Percentage	Number	Percentage
Bangladesh*	27 461	1.9	17	3.1
Bhutan**	18	0.0	0	0.0
Democratic People's Republic of Korea	5033	0.3	0	0.0
India	1 090 724	74.4	331	59.4
Indonesia	218 450	14.9	161	28.9
Maldives	0	0.0	0	0.0
Myanmar	110 146	7.5	21	3.8
Nepal	507	0.0	0	0.0
Sri Lanka	0	0.0	0	0.0
Thailand*	13 451	0.9	27	4.8
Timor-Leste*	94	0.0	0	0.0
Total	1 465 884	100.0	557	100.0

** Confirmed cases include those reported at health facilities and community level*

***The cases reported in Bhutan include both indigenous and introduced cases*

For E2020 countries (Bhutan, Nepal, Timor-Leste) and malaria-free countries (Maldives, Sri Lanka), imported cases have been excluded.

Fig. A1.1: Map showing malaria incidence in border districts on the Bangladesh–India border in 2016



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Production date: 16-Aug-18

Source: National Malaria Programmes of South-East Asia Region Member States

Within South Asia

Bangladesh–India

A full half of Bangladesh's 64 districts are on the border facing the Indian states of Assam, Meghalaya, Mizoram, Tripura and West Bengal (spanning about 4000 km) as well as a small part of Myanmar (Fig. A1.1; please also refer to section on Bangladesh–Myanmar). Of these 32 border districts, 13 malaria endemic districts with a population of 13 million have been categorized as: (i) low endemic – nine districts; (ii) moderate endemic – one district; and (iii) high endemic – three Chittagong Hill Tracts districts, based on API. The remaining 19 border districts report no or insignificant number of malaria cases although some of the adjacent Indian districts have reported cases and hence potential cross-border transmission of malaria remains a threat.

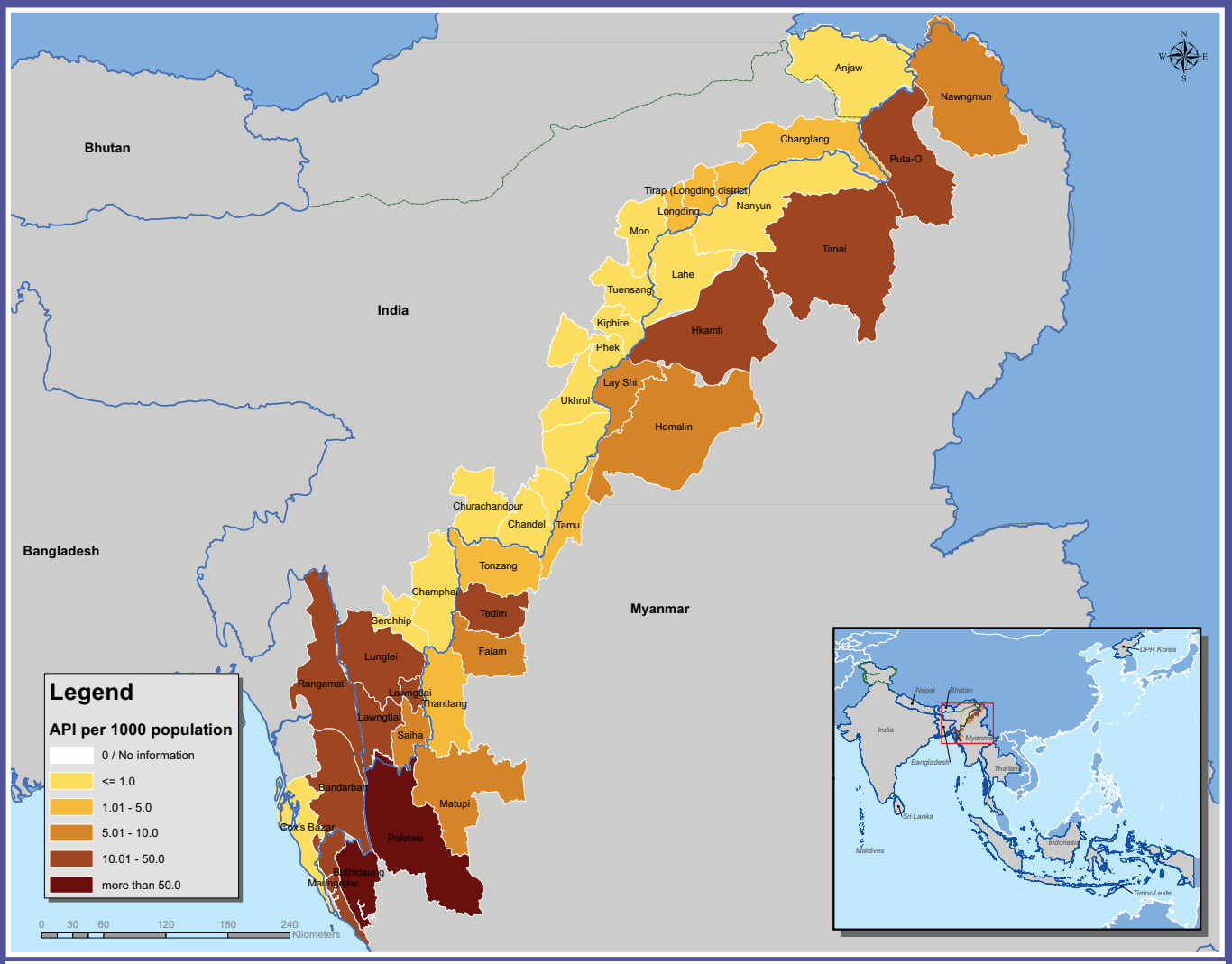
Progressive decline in malaria morbidity and mortality is noted from 2000 to 2016 with an upsurge in 2014. In 2016, the number of confirmed malaria cases and deaths were 27 461 and 17, respectively from 13 endemic border districts (Table A1.1). To ensure that the country remains on track to eliminate malaria by the regionally adopted goal of 2030, a new National Strategic Plan 2017–2021 has been developed. As part of the new plan, Bangladesh aims to achieve a malaria-free status by 2030. Key interventions include: early case detection and effective management, malaria prevention, malaria case and entomological surveillance and "supporting elements" (expanding research for innovation, improved delivery of services and strengthening the enabling environment).

On the Indian side, there are 25 districts in five states bordering Bangladesh. The malaria situation in these Indian states has also shown a reduction in cases and deaths, although an upsurge was noted in 2014 due to focal outbreaks in a few states, viz. Tripura. In 2016, the total numbers of cases and deaths in India as a whole were 1.09 million and 331, respectively (Table A1.1).

With the vision of a malaria-free India by 2030, the *National Strategic Plan for Malaria Elimination in India 2017–2022* has set the goal of eliminating malaria in Category 1 (API<1) districts by 2020, Category 2 (API 1–2) by 2022, and reducing transmission in Category 3 districts to stabilize API at <1 by 2022. The strategies include: diagnosis and case management, surveillance and epidemic response, prevention (integrated vector management) and cross-cutting interventions such as advocacy, communication and community mobilization, programme management and coordination, M&E and research and development.

Similar eco-epidemiological factors and challenges exist on both sides of the border in the Chittagong Hill Tracts districts of Bangladesh. Cross-border data is almost non-existent and information on mobile and migrant populations is rarely collected. Data are not also categorized by whether they are indigenous or imported, and as a result it is impossible to prioritize specific groups and design and implement appropriate interventions. (The NMCPs have routine surveillance systems to collect malaria data from endemic areas, including the border areas.) At present, there is no scope of registering international migrants through the existing land ports and no fever-screening mechanism. Cross-border initiatives are yet to be optimized.

Fig. A1.2: **Map showing incidence of malaria in the border districts of the Bangladesh–Myanmar border in 2016**



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Production date: 16-Aug-18

Source: National Malaria Programmes of South-East Asia Region Member States

Bangladesh–Myanmar

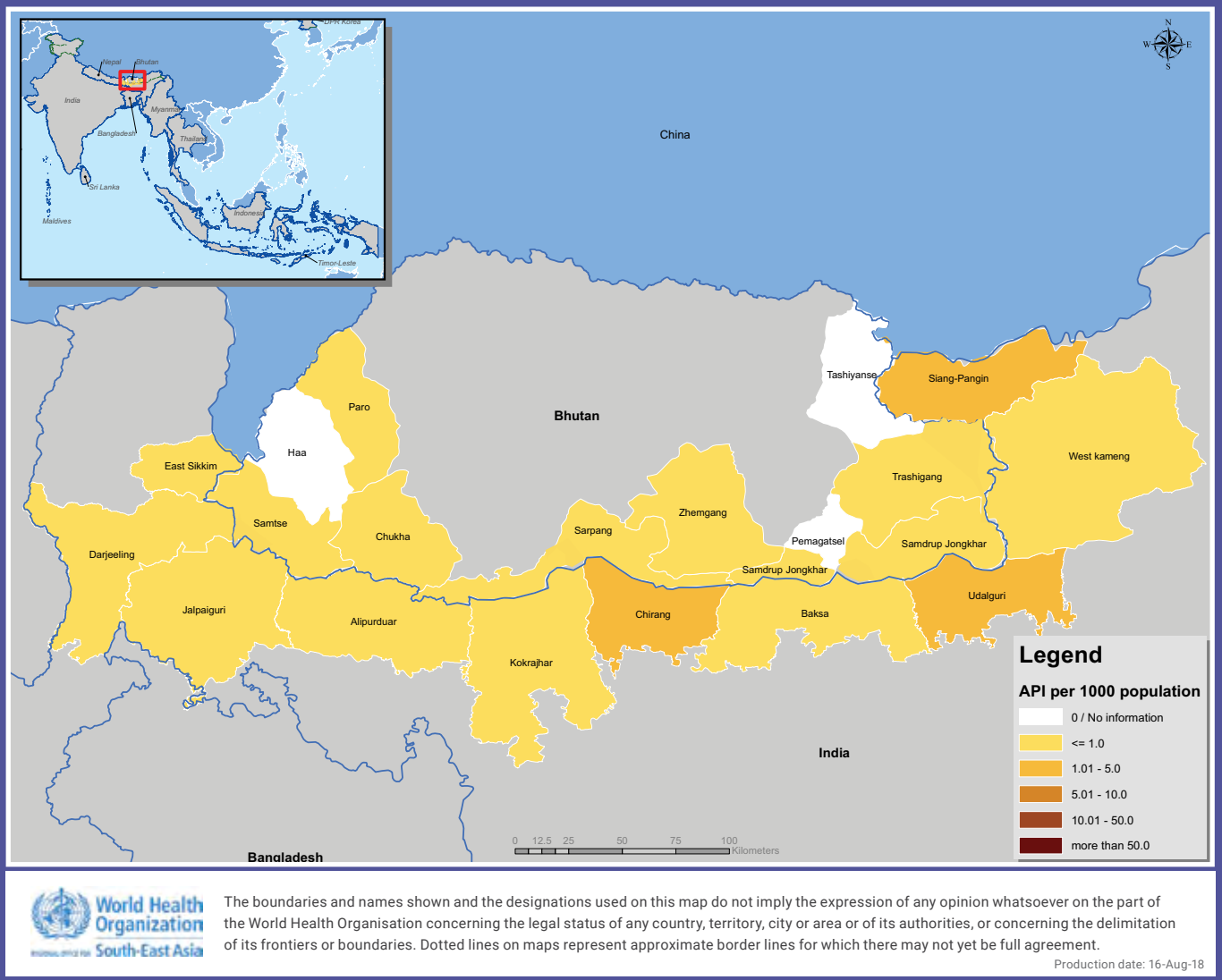
A small part of Bangladesh (spanning ~300 km) in the districts of Bandarban and Cox's Bazar is connected to Myanmar (Fig. A1.2). fever-screening mechanism. Cross-border initiatives are yet to be optimized.

In Myanmar, a total of 110 146 malaria cases and 21 malaria-related deaths were reported in 2016 (Table A1.1). Malaria transmission was largely restricted to the remote border areas of Rakhine and Chin. An incidence-based micro-stratification has been conducted down to the lowest level public health facility. Epidemic outbreaks have occurred in new population settlements such as those of internally displaced people.

The *National Plan for Malaria Elimination in Myanmar 2016–2030* has the following goals: (i) interrupt transmission and eliminate indigenous malaria by 2030; and (ii) maintain malaria-free status in areas where malaria transmission has been interrupted and prevent re-establishment of local transmission. The key interventions are case management, disease prevention, surveillance and cross-cutting efforts. The target is to eliminate *P. falciparum* by 2025 (a target throughout the GMS), and all malaria species by 2030 at the latest.

Cross-border data for the Bangladesh–Myanmar border areas are not currently available. Information on mobile and migrant populations is being attempted under the GMS malaria elimination initiative (such as for Myanmar areas bordering Thailand and China), but less so along the border areas with Bangladesh. Data on imported and indigenous cases are envisaged. The Myanmar NMCP routine surveillance system as well as certain subregional data sharing platforms dedicated to the GMS, e.g, Mekong Malaria Elimination Programme and Mekong Basin Disease Surveillance Project (MBDS) collect malaria data from endemic areas including the border areas. The existing national policy is to collaborate with bordering countries through organizing high level and local level meetings at different levels. However, cross-border initiatives between Bangladesh and Myanmar are yet to be optimized.

Fig. A1.3: **Map showing incidence of malaria in the border districts on the Bhutan–India border in 2016**



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Production date: 16-Aug-18

Source: National Malaria Programmes of South-East Asia Region Member States

Bhutan–India

The Bhutan–India border is 699 km long. The malaria situation in Bhutan has improved significantly over the years. In 2016, Bhutan reported 15 indigenous and 3 introduced malaria cases (Table A1.1), and 56 imported ones. Malaria cases are reported only from a few pockets bordering the Indian states of Assam and West Bengal (Fig. A1.3). Since 2013, the country has had zero malarial deaths.

The goal of the *Bhutan National Strategic Plan 2015–2020* is to achieve zero indigenous malaria in Bhutan by 2018 and obtain WHO malaria-free certification by 2020. The key strategic shifts are in the realms of governance, wherein the Bhutan Malaria Elimination Commission and Bhutan Malaria Elimination Technical Advisory Group are to be constituted. Additional actions include: malaria declared as a notifiable disease; enhanced case and vector surveillance to ensure follow-up and investigation and classification of all cases; active and reactive case detections; web-based Bhutan Malaria and Febrile Information System; short message service (SMS) case alert and notification; 100% surveillance on migrant population at entry points (eight private clinics are functional); intensified monitoring and supervision; and evidence based research. Bhutan is also implementing quality-assured laboratory diagnosis and treatment by establishment of external quality assurance for malaria diagnosis, obtaining certification and accreditation, instituting malaria diagnosis quality assurance in all health facilities and confirmation and genotyping of malaria cases using polymerase chain reaction. Besides, there is focused prevention and control through geographical reconnaissance via mapping, geo-wise (sub district) stratification of malaria-risk areas and populations and targeted interventions. One hundred percent case detection and treatment for parasite clearance and radical cure is done. Universal coverage of long-lasting insecticidal nets (LLINs) for at-risk populations is ensured.

On the Indian side, there are four states, viz. Arunachal Pradesh, Assam, Sikkim and West Bengal bordering Bhutan.

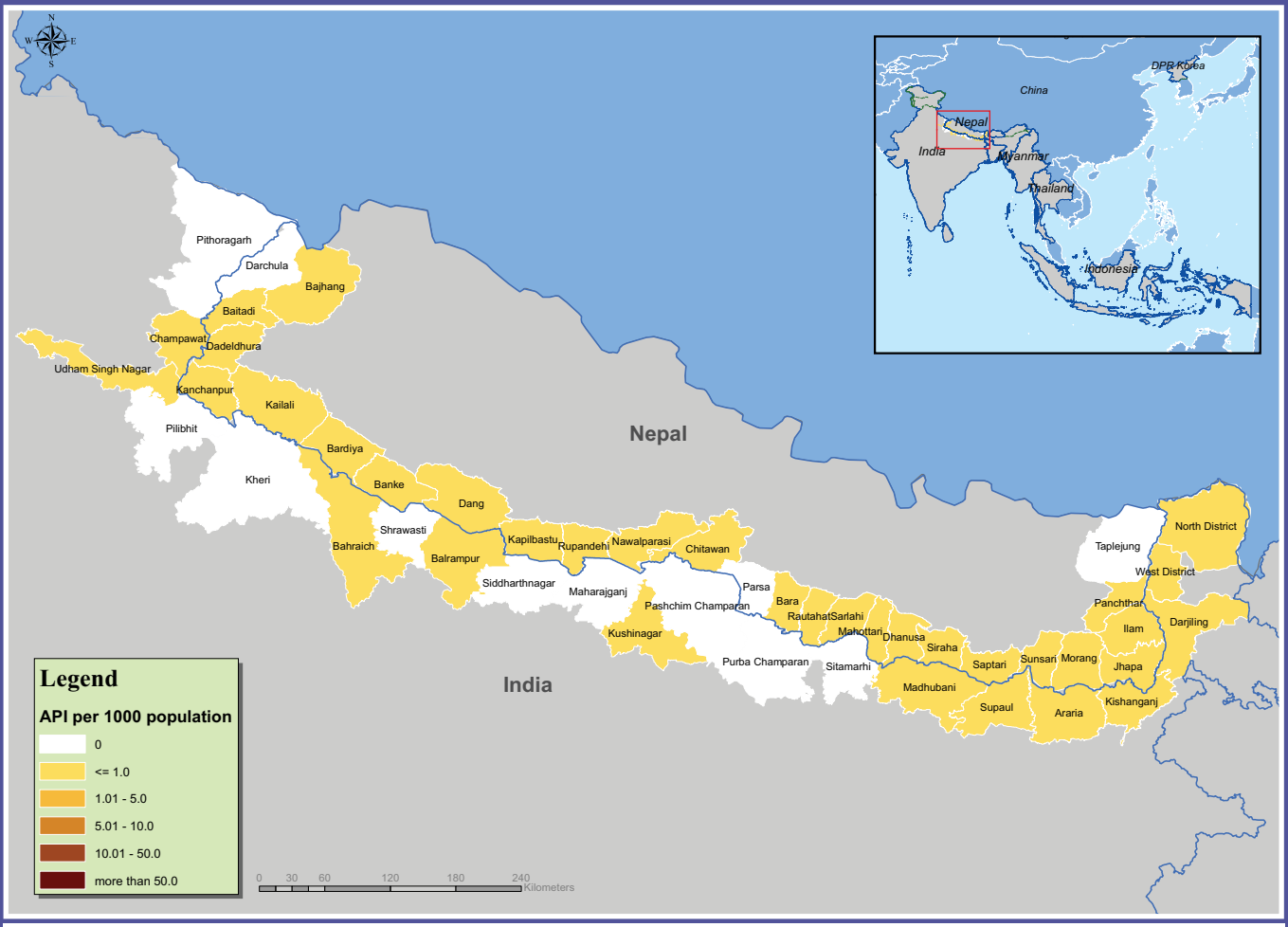
The challenges are more or less similar on both sides of the border. Bhutan has conducted situation analyses in border areas, while India is in the process of doing so. India currently does not have any cross-border data or classification of cases. Cross-border initiatives are limited to Government of India's support to Bhutan's malaria control and elimination efforts, and the involvement of NGOs like the Indo-Bhutan Friendship Association.

India–Myanmar

There are four Indian states along the Myanmar border, namely Manipur, Mizoram, Arunachal Pradesh and Nagaland, spanning 15 districts (Figure A1.2).

The India–Myanmar border areas have similar eco-epidemiological settings and challenges. One peculiarity is that some Indian villages can be reached only through Myanmar, posing complexities in terms of permissions. Cross-border data for India–Myanmar border areas are not currently available to each other, and the same holds good for information on mobile and migrant populations. Cross-border initiatives between India and Myanmar are yet to evolve, even though progress has been made on the Myanmar–Thailand and Myanmar–China border as part of the GMS malaria elimination initiative.

Fig. A1.4: Map showing incidence of malaria in the border districts on the India–Nepal border in 2016



World Health Organization South-East Asia

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organisation concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Production date: 16-Aug-18

Source: National Malaria Programmes of South-East Asia Region Member States

India–Nepal

Along the Nepal border, there are five Indian states, namely Bihar, Sikkim, Uttar Pradesh, Uttarakhand and West Bengal, spanning 21 districts and approximately 2000 km (Fig. A1.4).

Nepal's malaria programme has progressed to the elimination phase, with malaria mostly confined to pockets. In 2016, of the 1 009 reported malaria cases, 507 were indigenous and 502 imported (Table A1.1). Significant numbers of malaria cases are among migrant workers to inland Indian states rather than to adjacent border areas, indicating a need for inter-country collaboration not solely restricted to direct cross-border activities.

The marked improvements have encouraged Nepal to envision zero indigenous malaria cases by 2022 and a malaria-free Nepal by 2025, through implementing the *Nepal Malaria Strategic Plan 2014–2025*. LLIN distribution, indoor residual spraying (IRS), responsive spraying, entomological surveillance, SMS notification, case investigation, foci investigation and response are ongoing. Community engagement, awareness raising, school health and private sector orientation are also being carried out.

With the decline in indigenous cases, the proportion of imported cases (mostly from workers returning home from India) has risen. In 2016, the Epidemiology and Disease Control Division, Ministry of Health, Government of Nepal conducted a meeting to review the malaria situation, analysing the data/validation of imported cases, including details regarding the states/districts of India that are involved. This information has been shared with Indian counterparts for appropriate interventions, including availability of treatment to all residents including Nepalese migrant workers. In view of the large number of seasonal out-migrants, Nepal is conducting malaria mobile clinics in five risk districts bordering India. The evidence shows that Nepalese workers and mobile populations head for a range of Indian states, including Assam, Meghalaya, Mizoram, Gujarat, Himachal Pradesh, New Delhi and Kerala. The meeting proposed that this review take place annually together with Indian counterparts to guide appropriate planning in addition to sharing of surveillance and intervention information through WHO.

Even though not currently available, development of a cross-border referral and notification system for identified diseases would be beneficial. In 2012, the Health Secretaries of the two countries had signed an MoU to address vector-borne and other communicable diseases, including through disease-specific working groups and integrated disease surveillance. However, these commitments have yet to be implemented.

India–Sri Lanka

Although these two countries do not share borders, their proximity and imported cases from India are of public health concern to Sri Lanka, which was declared malaria-free in 2016. All 41 malaria cases reported in Sri Lanka in 2016 were imported. About half of imported malaria cases were contracted in India, mainly south India and mostly *P. vivax*. Case investigations have revealed that a majority of malaria infections involve Sri Lankan traders going to south India for short stays or migrant Indian workers in the construction industry, factories and agriculture. Sri Lanka has variable vulnerability (migrants are found in many formerly endemic areas) and receptivity (main and secondary vectors are found all over the country except in the hill country).

Regarding cross-border collaboration, attempts are often informal, though relevant. These include: creation of a technical support group; increased surveillance at ports of entry by screening high-risk personnel entering Sri Lanka from malaria endemic countries; screening high-risk populations in the country such as returning workers and refugees from malaria-endemic countries; malaria chemoprophylaxis for travellers to malaria endemic countries; early detection and prompt treatment of malaria cases by providing the required diagnostic and treatment facilities as per national guidelines by trained health staff; public awareness; complete case investigation and entomological investigation; entomological surveillance and vector control, including "disinfection" of aircraft and vector surveillance and control in and around ports.

The country is closely coordinating with WHO, United Nations High Commissioner for Refugees (UNHCR) and International Organization for Migration (IOM). The key areas being addressed include sources of imported malaria (employment seekers, business travellers, asylum seekers, returning refugees, pilgrims and tourists) and members of the United Nations peacekeeping force.

India–Maldives

Although these two countries also do not share borders, the high influx of migrants and imported cases from India remain a major concern. Since the last indigenous case in 1984, the only reported cases of malaria in Maldives have been imports. Between 2001 and 2015, there were 102 cases of imported malaria. In 2016, two imported cases were reported, both from India.

In December 2015, WHO officially certified the Republic of Maldives as the first malaria-free country in the South-East Asia Region. Maldives' success in becoming and remaining malaria-free was achieved through years of concerted efforts by health workers and communities on dispersed islands, unwavering political will, and the support of partners such as WHO. Maldives continues to consolidate surveillance for imported cases.

Beyond South Asia

GMS with emphasis on Myanmar and Thailand

The six GMS countries are Cambodia, the People's Republic of China (specifically Yunnan Province and Guangxi Zhuang Autonomous Region), the Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam. The GMS is characterized by important commonalities in ecology, social and economic development and extensive population mobility within and across national borders. The area covers 2.4 million km and has a population of about 278 million.

Over the past 15 years, the malaria situation in the GMS has improved greatly and is reflected in the steady decline in annual malaria incidence and deaths. However, the GMS nations still face challenges as malaria epidemiology in this subregion exhibits enormous heterogeneity. Within each country, malaria distribution is uneven, exemplified by high transmission pockets occurring along international borders and in forests and forest fringe areas. There is serious multidrug resistance of *P. falciparum*, including partial artemisinin resistance and partner drug resistance in certain areas of the GMS, in response to which all GMS countries have committed to eliminate malaria.

In 2014, the Malaria Policy Advisory Committee of WHO reviewed the malaria situation in the GMS and undertook a malaria elimination feasibility study. Drawing from several consultations with Member States and partners, and in line with the principles of the *Global Technical Strategy for Malaria 2016–2030*, WHO led the development of the *Strategy for Malaria Elimination in the Greater Mekong Subregion (2015–2030)* – the basis of a "One Region One Strategy" approach to eliminate malaria by 2030. The goals are: (i) to eliminate malaria by 2030 in all GMS countries, and considering the urgent action required against multidrug resistance in the GMS, to eliminate *P. falciparum* malaria by 2025; and (ii) in areas where malaria transmission has been interrupted, to maintain malaria-free status and prevent reintroduction. Antimalarial drug efficacy is assessed annually through therapeutic efficacy studies (TES) in sentinel sites for early detection of declines in antimalarial efficacy, providing evidence for guiding and adapting national malaria treatment policies. To improve the response to multidrug resistance in the GMS, Member States – with the support of WHO and multiple partners – continually collect and analyse quality data across the subregion and share them via a GMS data sharing platform. With technical collaboration from WHO, all GMS countries have developed and are implementing national malaria elimination plans based on the GMS strategy.

In 2017, WHO launched the Mekong Malaria Elimination (MME) Programme. The WHO MME regional hub team in Cambodia supports malaria elimination in the GMS by facilitating coordination and dialogue among partners, communicating with external stakeholders and coordinating cross-border initiatives in an effort to reduce transmission, particularly in high burden areas. Key interventions include strengthening systems for tracking malaria cases and deaths and appropriate response, and providing access to malaria interventions for all persons at risk including developing approaches to reach mobile and migrant populations. Significant support through the Global Fund's Regional Artemisinin-resistance Initiative (RAI) and current RAI2-Elimination (RAI2E) (2018–2020) grants has enabled countries to scale up coverage by interventions. WHO is working with GMS countries and the GFATM to optimize the use of this funding in the subregion. For example, a data-sharing platform launched in 2016 by WHO with financial support from the Global Fund is helping countries map and analyse their disease burden and identify gaps in coverage of key malaria interventions, and serves as an important tool for aligning

Volunteer tests for malaria at rubber plantation, Myanmar. Vlad Sokhin/WHO

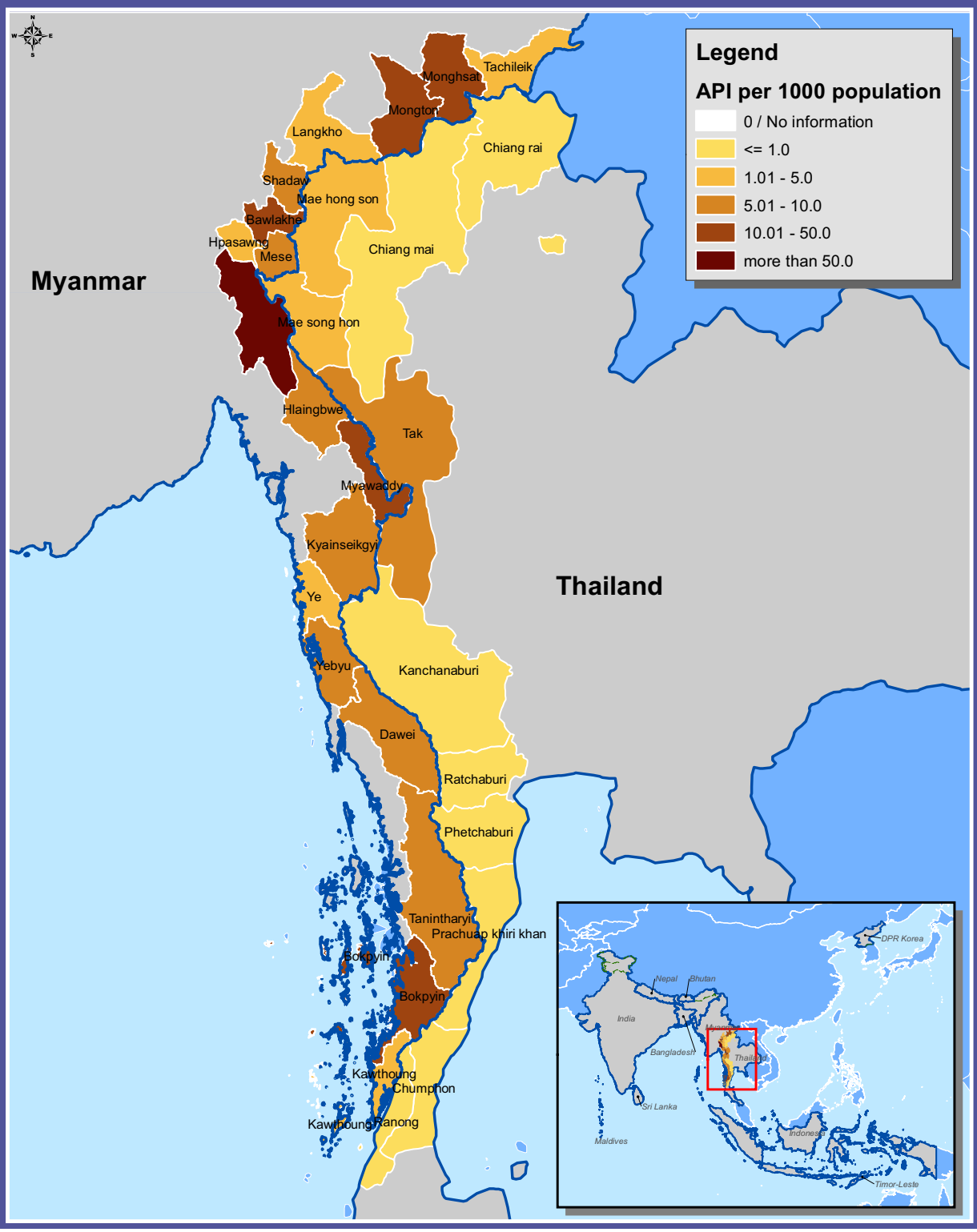
and harmonizing malaria surveillance and response strategies across the subregion. The *Ministerial Call for Action to Eliminate Malaria in the Greater Mekong Subregion before 2030*, signed in December 2017, reaffirmed the commitment to subregional collaboration and to accelerate malaria elimination in the GMS.

As part of intensifying GMS malaria elimination efforts, the Mekong Therapeutic Efficacy Studies Network (Mekong TES Network) has been expanded from 35 to 48 sentinel sites in the GMS. The Network has been meeting regularly since 2007 with the following objectives: (i) review the antimalarial drug resistance situation in GMS countries; (ii) review and discuss updates of WHO drug efficacy monitoring tools and policies; (iii) develop work plans and budgets for each country and the network for TES monitoring. Concerns that if artemisinin resistance and partner drug resistance spread beyond the GMS, it is likely to first occur in India, underscore the importance of collaboration between the GMS TES network and the Bangladesh, Bhutan, India, Nepal, Sri Lanka (BBINS) TES Network. Malaria programme representatives from India and Bangladesh have been invited to the GMS TES Network meetings since 2014, and joint meetings of all three Asia–Pacific TES networks (GMS, BBINS and Pacific) have been held in 2015 and 2016. Member States shared experiences and approaches to defeat malaria and discussed cross-border collaboration, among other discussion points. One of the recommendations of the most recent GMS TES Network meeting in Viet Nam in 2017 was that data from neighbouring countries should be considered when planning drug policy change.

Lessons learnt from the GMS include: national/subnational elimination of *P. falciparum* requiring multisectoral and policy guidance on mobile and migrant populations, with responsive strategies/interventions and more involvement of economic, agricultural and environmental planning bodies; understanding the influence of land use change as part of routine malaria programme surveillance; current and anticipated dynamics of the local area, risk mitigation, local transmission, timing and duration of mobility and prioritizing population movements with the most significance to malaria; border/cross-border strategy involving synergistic/complementary activities on the opposite side; standardized key data variables to be collected and shared through appropriate platform/s; collaboration with the formal and informal health and non-health private sector; constraints in cross-border collaboration, particularly those requiring timely and regular policy dialogue with national and regulatory authorities, intergovernmental bodies such as ASEAN, development partners and WHO; and further strengthening of test–treat–track and behaviour change communication (BCC), especially for migrant and mobile populations.

For the GMS and other countries in the South-East Asia Region, details are briefly presented below.

Fig. A1.5: Map showing incidence of malaria in the border districts on the Myanmar–Thailand border in 2016



Source: National Malaria Programmes of South-East Asia Region Member States

Myanmar–Thailand

As mentioned previously, Myanmar has made significant progress in reducing malaria morbidity and mortality. The malaria situation in Myanmar is heterogeneous in terms of epidemiology, parasite drug resistance and technical/operational constraints. The presence of multidrug resistance including artemisinin partial resistance and partner drug resistance in Myanmar call for urgent actions at national and Mekong subregional levels. *The National Plan for Malaria Elimination 2016–2030 and the National Strategic Plan for Intensifying Malaria Control and Accelerating Progress towards Malaria Elimination 2016–2020* have been developed in line with WHO *Global Technical Strategy for Malaria 2016–2030 and the Strategy for Malaria Elimination in the Greater Mekong Subregion 2015–2030*.

Malaria is of particular concern in the border provinces/states. Decades of internal conflict have affected the lives of many civilians in Myanmar's border areas. A large number of displaced persons and undocumented migrants stay in UNHCR-managed camps. While some of the at-risk migrant population lives in settlements, others are highly mobile, moving back and forth across the border. Undocumented migrants are particularly disadvantaged, lacking access to health services and with high rates of morbidity.

Shan, Kayah, Kayin and Mon States and Thanintharyi Division share borders with Thailand (Fig. A1.5). Thai and Myanmar citizens normally need only border passes to cross at official checkpoints.

Thailand has shown significant progress in reducing malaria, with a case-based surveillance system in place, and is following a subnational elimination approach with 35 out of 76 provinces recently having been declared as malaria-free. In 2016, 13 451 confirmed malaria cases and 27 malaria-related deaths were reported (Table A1.1). The largest persistent clusters of cases are on the western border and in the southern areas of the country.

Thailand's Bureau of Vector-borne Diseases has since identified harmonized actions with neighbouring countries as a key challenge to achieving the national elimination goal. The Ministry of Public Health, Thailand has developed a four-pronged Strategic Plan for Malaria Elimination 2017–2026 with the vision that Thailand will be malaria free by 2024. An operational plan 2017–2021 is under implementation. This effort embraces integration of work and resources among all related sectors such as local administration organizations, health promotion hospitals, private health facilities and civil society organizations to position malaria elimination as a part of the general health services and to be in line with the 20-year National Strategic Framework (2017–2036).

Both countries, together with others in the GMS, pursue a multi-country, multi-partner initiative to eliminate malaria from the GMS before 2030.

China-Lao border. Eva Christophel/WHO

A notable cross border initiative is the "Twin City" approach wherein screening points at the borders are established to screen mobile and migrant populations (32 along the Myanmar–Thailand border), as well as mapping of malaria hot spots, giving priority to mobile and migrant populations, establishing malaria posts, operation research on targeted malaria treatment through mass drug administration, intensive community case finding, directly observed treatment, case investigation, vector control and surveillance. The Twin City approach fosters collaboration between officials of malaria control programmes across borders. The activities include biannual coordinated work plans and reports, quarterly meetings to discuss progress and plans and regular exchange of monthly malaria information, utilizing the MBDS form; real time sharing of unusual data such as unusual weekly caseloads to support planning for potential outbreaks; health facility mapping; introduction of multilingual patient referral forms, appointment cards and patient materials for cross-border patients; and bilingual billboards and posters to promote malaria awareness for cross-border migrants, in addition to engagement with private sector, work places, etc.

Myanmar–Lao People's Democratic Republic

The Lao People's Democratic Republic is a previously land-locked country. Now, as a consequence of intense infrastructure development in the GMS, it is a land-linked GMS country bordering Cambodia, China, Myanmar, Thailand and Viet Nam. The Lao People's Democratic Republic has successfully brought down malaria to relatively low levels and targets malaria elimination by 2030. In 2016, the number of cases confirmed with microscopy or rapid diagnostic test was 11 233 and the number of deaths was 1. *The National Strategic Plan for Malaria Control and Elimination 2016–2020* represents the first phase of the 15-year strategy to eliminate malaria in Lao People's Democratic Republic. One of the strategies (Strategy 1.4) is to strengthen cross-border collaboration for malaria elimination in alignment with the *Strategy for Malaria Elimination in the Greater Mekong Subregion 2015–2030*. The Ministry of Health and national Center for Malaria, Parasitology and Entomology (CMPE) will seek broader information-sharing agreements with national malaria programmes and provincial and district health departments in neighbouring countries to improve understanding of transmission and population dynamics in the region. The CMPE will seek to participate in semi-annual meetings with the national malaria programmes in Myanmar and other countries to synchronize the implementation of border-related activities with neighbouring countries. In addition, twin-city collaborations with border districts of neighbouring countries are envisioned, to establish regular planning meetings as well as joint monitoring and supervision visits with health officials of neighbouring countries.

On the Myanmar side, Shan State East borders with Lao People's Democratic Republic (237 km) with most of the area under forest.

The overall Myanmar malaria situation in 2016 and other details are presented in the section on Bangladesh-Myanmar.

Myanmar–China

China is aiming at malaria elimination nationwide by 2020. However, in 2017 there were already zero locally transmitted cases reported throughout China.

P. falciparum malaria had been endemic only in Yunnan province, bordering Myanmar, with conducive ecosystems, warm monsoon climate, abundant vectors, relatively poor socioeconomic determinants in remote areas, predominantly minority populations as well as population movements. Particular challenges exist in terms of higher malaria burden

and lack of health care and malaria control services in the malaria-endemic areas of Myanmar along the border with China, with armed conflicts in some areas complicating the situation. A further challenge is the importation of cases through mobile and migrant populations. In Yunnan Province, all cases since 2017 were imported, primarily from the adjacent five special zones in Myanmar.

The extent of Myanmar's border areas with China is 2185 km. Formal collaboration exists between Yunnan/China and Myanmar on malaria and dengue control. The collaboration includes information exchange, joint campaigns, establishing border malaria posts (for active case detection, blood examination and distribution of malaria package), besides three joint workstations – health bureaus in Laza (Kachin state) and Mongla, and Quingshui river in Shan State. Informal information exchange and technical support (between Yunnan province of China and Myanmar) is also present. In 2014, 2016, 2017 and recently in 2018, China and Myanmar held cross-border meetings where collaboration strategies and activities were developed. The outcomes were to finalize the scope of the Yunnan–Shan North and Shan East activities, including a gap analysis, budgeting, implementing and monitoring, coordination and other institutional arrangements, to develop a strategic plan to eliminate malaria on the China-Myanmar border (2018-2030) and to mobilize the required resources. The cross-border assistance is mostly being initiated and supported by China.

Democratic People's Republic of Korea–Republic of Korea

P. vivax had been endemic on the Korean Peninsula. Success in reducing the malaria caseload over the years led to elimination of malaria in the Democratic People's Republic of Korea. However, malaria resurged in 1998 with approximately 2100 cases reported in Kaesong city and some counties of Kangwon and South Hwanghae provinces bordering South Korea. Then it spread rapidly and widely across receptive areas of the country, resulting in a massive epidemic with approximately 0.3 million cases reported in 2001. Cross-border collaboration on the control of vivax malaria in East Asia was facilitated by WHO in the following years (see WHO reports of interregional meetings on *P. vivax* malaria from 2003 onwards). Effective implementation of the National Malaria Control Strategy 1999–2007 and subsequent national malaria strategic plans by the Government of the Democratic People's Republic of Korea, in collaboration with WHO and funding support by the GFATM from 2010 onwards resulted in a dramatic decline of the caseload. Malaria transmission with indigenous cases is now limited only to eight malaria endemic provinces/cities, namely Pyongyang, South Pyongan, North Pyongan, South Hwanghae, North Hwanghae, Kangwon, South Hamgyong and Nampo.

The goal of the Democratic People's Republic of Korea's National Malaria Elimination Strategy 2018–2022 is to completely interrupt local transmission in the country by 2022. At present, cross-border collaboration is non-existent, although the persistence of border malaria requires establishing effective cooperation between the Democratic People's Republic of Korea and the Republic of Korea. Exchange of relevant information and coordinated activities between these neighbouring countries including possible financing for malaria elimination with facilitation by WHO are imperative.

In 2016, the Republic of Korea reported 5033 confirmed malaria cases (Table A1.1). As part of their malaria elimination plan, by 2020: cross-border collaboration with Democratic People's Republic of Korea is to be stepped up; prevention measures to eliminate malaria from both sides of the demilitarized zone increased; cooperation between the Ministry of National Defense and the Korea Center for Disease Control and Prevention increased; and disease surveillance of military personnel and civilians in risk areas enhanced.

Indonesia/Papua province–Papua New Guinea

Malaria cases in Indonesia have been brought down significantly to 218 450 in 2016 (Table A1.1). Currently, the majority of the population lives in malaria-free areas. Malaria cases are concentrated in the eastern part of Indonesia – Papua province (bordering Papua New Guinea), West Papua, NTT, Maluku, North Maluku and Bengkulu contribute about 80% of malaria cases.

There are four strata of endemicity. For each stratum, a combination of strategies and interventions is implemented to decrease endemicity. For low endemic stratum, strategies to eliminate local transmission are put in place. For areas in maintenance phase, the strategies are directed towards prevention of re-introduction of local transmission.

Massive decentralization and high population mobility in border areas continues to require collaboration among providers of health-care services. Some important points to be addressed are:

- diagnosis and treatment is the responsibility of areas where the cases are detected;
- follow up of notified cases made through cross notification rest with the respective administrative areas;
- vector control in the cross-border areas needs to be mutually agreed upon; and
- cross-border collaboration encompasses sharing of policies related to case management, vector control and resistance to antimalarials and insecticides.

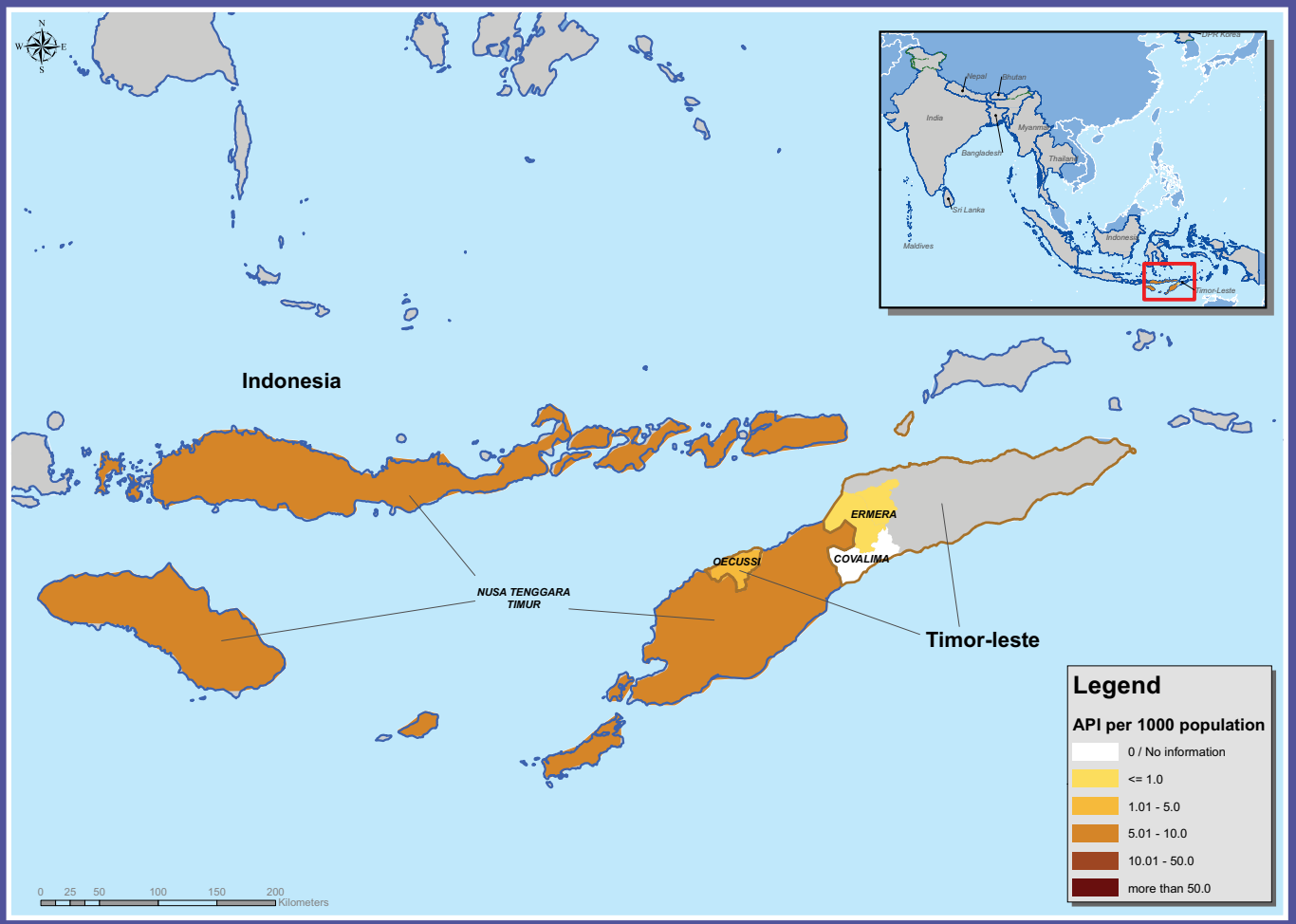
The National Malaria Programme in Indonesia operates under a legal framework related to malaria elimination efforts. The 2009 decree of the Minister of Health proclaimed that Indonesia aims to eliminate malaria by 2030 to create a healthy community.

Indonesia's *National Strategic Plan for Malaria Elimination 2017–2020* includes the following strategies:

- **Acceleration:** in high endemic areas – Papua, West Papua, North Maluku, Maluku and East Nusa Tenggara. Interventions include improved diagnosis and case management, LLIN mass campaign and IRS at high-endemic villages;
- **Intensification:** in the focus areas – mining, agriculture, forestry, transmigration, evacuation – and areas outside the eastern part of Indonesia. Interventions include improved diagnosis and case management, LLIN in routine and foci areas, mass blood surveys and IRS at outbreak villages;
- **Elimination:** in low malaria endemic areas – interventions are active case detection, strengthening of migration surveillance and monitoring of receptive areas.

A bilateral MoU between Indonesia and Papua New Guinea has been signed. In recent Indonesia–Papua New Guinea border meetings, discussions included port health, collaboration on case management of malaria, tuberculosis (TB) and HIV/AIDS and prevention of outbreaks of vaccine-preventable diseases, among others.

Fig. A1.6: Map showing incidence of malaria in the border districts on the Indonesia–Timor-Leste border in 2016



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Production date: 16-Aug-18

Source: National Malaria Programmes of South-East Asia Region Member States

Indonesia–Timor-Leste

The epidemiology of malaria in Timor-Leste has changed dramatically in the last decade, particularly in the last 5 years, with a national API of less than 1 per 1000 population. In 2016, only 94 cases were reported (Table A1.1). This drop has come about due to a well-funded programme with technical support and a technically strong strategy built on the foundation of a rapidly evolving health system that is providing basic health services down to the household level. The programme was reoriented towards malaria elimination in 2015 and case and foci investigations commenced in 2016. The *National Strategic Plan for Malaria Elimination 2017–2021* was developed with the goal of interrupting indigenous malaria transmission by end 2021. Secondary objectives include prevention of reintroduction of malaria in municipalities where indigenous transmission has already been interrupted, and to have zero deaths due to indigenous malaria. A high-level task force for malaria elimination directly under the Prime Minister will be established to sustain political and financial commitment and to oversee the implementation of the malaria elimination programme.

The country includes the nearby islands of Atauro and Jaco, in addition to Oecusse, which is an exclave in Indonesian West Timor. Timor-Leste shares a 280 km land border with West Timor province of Indonesia (Fig. A1.6). Many families are divided by the border, and large-scale undocumented migration takes place across this border. There are also many islands belonging to Indonesia in the close vicinity of Timor-Leste that are frequently visited by many Timorese. Many Indonesians visit Timor-Leste as well. Malaria incidence in West Timor province of Indonesia is two to three times higher than in Timor-Leste. Oecusse municipality and border areas are extremely vulnerable to malaria. Cross-border collaboration has been initiated between Timor-Leste and Timor province of Indonesia. Further, in Atauro island, there is large scale migration of fishermen to Indonesia, and many cases of imported malaria due to this activity have been recently reported. A MoU between Timor-Leste and Indonesia on cross-border collaboration for health has been signed in 2017, but further steps need to be taken now to implement it.

Indonesia-Timor-Leste border. Ledgardo T Lacson (mrphilippines1974.wordpress.com)

Annex 2 – Past and present initiatives and platforms

For more than two decades, numerous efforts have been made in the Region to tackle malaria along international borders and through cross-border collaboration, with WHO playing a key role in advocating and facilitating such efforts. The impact has been inconsistent so far. The most tangible progress has been in the GMS through the Mekong Malaria Elimination (MME) Programme, since cross-border efforts have been imbued with urgency because of the threats posed by multidrug resistance, and funding, support by multiple partners and a subregional coordination by WHO have been available. But in many other cases, cross-border collaboration and efforts in border areas have not been sufficiently operationalized. This annex presents an overview of cross-border initiatives and platforms in the Region relating to malaria since 2000.

Initiatives

- One of the most important regional initiatives was creating a network for Bangladesh, Bhutan, India and Nepal (BBIN) in 2000 to implement cross-border activities for control of important infectious diseases, namely HIV/AIDS, TB, malaria and kala-azar. The goal was to institutionalize collaborative mechanisms in terms of development of new interventions, expansion of proven interventions and improvement of surveillance programmes in selected border districts. Major results of the BBIN network centred on information sharing via a website and drafting of reports, etc. However, many planned activities were not implemented because of lack of resources, follow-up and coordination support, and poor linkages with local partners and institutional mechanisms. The network was eventually disbanded, although episodic activities were held to discuss the cross-border situation and possible responses.

  In 2012, another WHO inter-country consultation on networking for malaria control/elimination in the South-East Asia Region emphasized a revival with the inclusion of Myanmar and Sri Lanka for web-based information sharing, etc. Deliberations focused on consolidation of efforts through multi-pronged strategies by each Member State.

  Recently, the network was revived as the Bangladesh, Bhutan, India, Nepal, Sri Lanka (BBINS) TES Network for drug resistance monitoring, and a meeting was held in 2014. BBINS countries joined other TES network meetings in 2015 and 2016. In 2018, a further BBINS meeting is scheduled.

- Subsequent to several border meetings during 1995–1998 in the South-East Asia Region countries for trans-border control of malaria and kala-azar and an inter-country meeting on cross-border problems in Nepal in 2001, the need for developing and implementing of joint plans was emphasized to control priority communicable diseases – HIV/AIDS, TB, malaria and kala-azar. The activity was further endorsed during a series of inter-country meetings – New Delhi (2001), Maldives (2001), Nepal (2001) and at the Fifty-fourth Session of the South-East Asia Regional Committee. WHO initiated a programme on cross-border control in 11 selected pilot districts of Bangladesh, Bhutan, India and Nepal. A series of joint action plans were developed (Bhutan and India, Bangladesh and India, Nepal and India) but this momentum and success was transient.

- In 2001, WHO operational guidelines on cross-border control of priority communicable diseases detailed a step-by-step approach to operationalizing cross-border interventions.

- IHR 2005 is an internationally agreed instrument for global public health security. It

represents the joint commitment to shared responsibilities and collective defense against disease spread and has been legally binding for WHO Member States since June 2007. Its purpose is to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade. IHR calls for strengthened national capacity for surveillance and control, designated points of entry in travel and transport, prevention, alert and response to international public health emergencies, global partnership and international collaboration and rights, obligations and procedures, and monitoring of progress. The control of diseases at border crossings remains an essential element of the regulations. The key elements of IHR highlight the need for local collaboration and actions on local issues that should not be restricted to a checkpoint approach only.

- An Asia Pacific Strategy for Emerging Diseases was developed in 2005 as a road map to strengthen core capacities in Member States for effective preparedness planning, prevention, prompt detection, characterisation, containment and control of emerging infectious diseases threatening national, regional and global health security. The strategy emphasized that the term "emerging infectious diseases" includes so-called new diseases, as well as re-emerging and resurging known diseases and known epidemic-prone diseases. Recognizing that infectious diseases do not respect borders, the strategy underscored global partnerships, rapid sharing of data and other information, enhanced preparedness and evidence-based control strategies towards fulfilling the broader requirements of IHR 2005 and covering public health events of potential international concern, irrespective of origin or source.
- Antimalarial drug resistance has developed since the 1960s in the GMS. In 1999, Roll Back Malaria Mekong was established. The United States Agency for International Development (USAID) has supported this initiative for many years and is still supporting some GMS countries. The US President's Malaria Initiative has included the GMS in its significant support for malaria, the only area outside Africa to be included to this day.
- The MBDS Project, originally funded by the Rockefeller Foundation, comprises six participating countries – Myanmar, Thailand, Cambodia, China (Yunnan and Guangxi Provinces), the Lao People's Democratic Republic, and Viet Nam – and a growing number of development partners, seeking to reduce morbidity and mortality caused by outbreak-prone diseases in the subregion. These countries have been working together since 2001 to progressively build local capacity, share information and cooperate in outbreak response and pandemic preparedness. In May 2007, the six participating countries signed MoUs to continue MBDS cooperation indefinitely. At approximately the same time, WHO's revised IHR came into effect. In 2007, a conference in Bellagio led to a call for action related to subregional surveillance networking. A newer initiative that began in 2009 connects health organizations for regional disease surveillance. The MBDS proves that a subregional disease surveillance and information exchange can effectively facilitate cross-border cooperation.
- A Regional consultation on cross-border collaboration in disease control – held in India in 2009 – reviewed the status of cross-border control of priority communicable diseases in the South-East Asia Region. Discussions were held to develop a framework for action for policy-level endorsement and operational-level implementation in country-specific contexts. Recommendations for Member States

and WHO included the critical need to improve mechanisms for operationalizing collaboration in terms of an inter-country working group on cross border collaboration at national and local levels, regular bilateral meetings for development of joint plans of action, inclusion of health issues in the agenda of bilateral security and trade meetings, as well as information sharing and communication networks among neighbouring countries and districts.

- In 2015, the Global Fund South-East Asia Pre-board Constituency Meeting in Bhutan endorsed and approved several recommendations, with special emphasis on organizing a regional forum for sharing lessons learnt among the South-East Asia Region countries on a harmonized approach and forming a regional constituency policy. One of the recommendations was that the Bhutan malaria programme, which was close to achieving malaria elimination, should consider a holistic approach of integrating other communicable and emerging infectious diseases into the border surveillance system, in addition to stronger cross-border malaria control measures and collaboration. In 2016, a similar meeting in the Maldives also underscored the need for regional cross border collaboration for malaria elimination in the South-East Asia Region, including the mobilization of resources in the form of catalytic funding from the GFATM or savings from existing country grants. In 2018, the SEA Pre-board Constituency Meeting in New Delhi reiterated the critical importance of cross-border collaboration in the Region and the need for a regional mechanism.
- Due to increased regional and economic integration with the formation of ASEAN and massive infrastructure projects including opening of "friendship bridges" in the GMS, people can now move freely from one country to another. This poses multiple challenges to the prevention, control and elimination of communicable diseases. The emergence of partial resistance to artemisinin and partner drug resistance in the GMS is regarded as a regional and global health security threat. As part of the early response, WHO Global Plan for Artemisinin Resistance Containment and the emergency response to artemisinin resistance (ERAR) emphasized the need for an accelerated and well-coordinated regional approach to this emergency. The response was changed to a GMS-wide malaria elimination strategy and programme, a multi-country multi-partner initiative, with WHO coordinating the subregional effort from its bi-regional hub in Cambodia. This effort aims at better collaboration between programmes and among sectors, better surveillance and tools, and well-coordinated cross-border activities for health and development, especially focusing on mobile and migrant populations, among others. The strategies include: screening points, malaria posts, fixed schedule mobile clinics, "twin city" initiatives, "buddy" health clinics, positioning of village health workers/volunteers, etc. in border villages, malaria corners in border areas/military camps, as well as cross-border meetings/dialogue at local and national level. The interventions are: diagnosis and supervised treatment, bilingual messaging, patient cards, LLINs/long-lasting insecticidal hammock nets (LLIHNs), repellent distribution, BCC, private sector accreditation and surveillance. The Global Fund allocated funding through the Regional RAI for the period 2014–2017 to cover five GMS countries. The RAI has been expanded in a second phase, the RAI2E programme, for a 3-year period (2018–2020). The RAI2E supports increased malaria service coverage for remote populations in border areas and other at-risk populations, as well as case management through health volunteers and strengthening of national surveillance systems. The GMS Malaria Elimination Strategy 2015–2030, the first subregional strategy to effectively operationalize the GTS, is a prime example of partnership and collaboration with six Member States, WHO and multiple development partners joining forces to tackle a subregional malaria multidrug resistance issue.

- Population mobility has been identified as an important challenge in the context of multidrug resistant malaria in the GMS. Between 2011 and 2014, WHO and partners facilitated a series of GMS cross-border meetings and workshops, strengthening support to Member States by developing technically sound strategies among at-risk mobile and migrant populations, especially along national borders with high burdens of malaria as well as in locations where artemisinin resistance has been detected or suspected. Cambodia and Myanmar have developed specific national malaria strategies for migrant and mobile populations, while other GMS countries have also made commitments to addressing challenges related to population mobility within their national strategies. A series of WHO publications were developed, including a toolkit, and in 2016 *Approaches for mobile and migrant populations in the context of malaria multidrug resistance and malaria elimination in the Greater Mekong Subregion* brought together the central concerns related to malaria and population mobility in the GMS, in order to assist countries to better understand the challenges relating to population mobility, identify priorities and take action. Malaria elimination programmes should become more proactive in reaching out to migrant and mobile populations and in factoring in major shifts in the emerging socioeconomic context of malaria into their planning.
- Meetings/consultations/documents from recent years have focused on the challenges posed by population movements.
    - A report on population mobility and malaria published in 2017 presented a review of existing national laws, policies and legal frameworks in GMS countries (Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam) as well as regional and international legal frameworks and policies as they relate to the access of migrants (internal, inbound and outbound) to health services, particularly those for malaria.
    - An informal consultation in October 2016 on malaria and mobile and migrant populations focused on addressing priority gaps in the context of malaria elimination in the GMS. The consultation reviewed the progress made and current status of implementation with regard to mobile/migrant populations in the context of multidrug resistance and malaria elimination in GMS countries, as well as planning and operationalization of key interventions to improve access to malaria services for these populations in the subregion.
    - Informal consultations on improving access to malaria control services for migrant and mobile populations in the context of the emergency response to artemisinin resistance in the GMS were held in Myanmar and Viet Nam in 2014. Salient discussion points included information exchange, private sector involvement, surveillance, M&E and coordination, networking and collaborative mechanisms. Issues related to migrant and mobile populations in the context of malaria elimination and artemisinin resistance were also addressed. As a follow-up to the above, an action plan was developed during a further consultation in Thailand in 2014 to improve access to malaria interventions to mobile and migrant populations, develop a surveillance, monitoring and evaluation strategy and a BCC strategy.
- An inter country meeting on cross-border collaboration was held in New Delhi, India in 2016. This meeting underscored the urgent need to develop a framework for cross-border collaboration and undertake implementation in alignment with the GTS 2016–2030 and the Regional Framework for Action. The general objective was to strengthen collaboration for elimination of malaria in South Asia, contrib-

uting to a malaria-free South-East Asia Region by 2030. The specific objectives were to: (i) review the present malaria situation (including drug and insecticide resistance) and malaria programme activities and their quality/coverage in South Asian countries along the borders, including related challenges and existing cross-border collaboration mechanisms; (ii) identify areas of practical and effective mechanisms of collaboration across borders to accelerate malaria elimination and prevent re-establishment of local transmission in malaria-free areas; and (iii) outline a framework for cross-border collaboration in malaria elimination in South Asia. The recommendations were to: develop a protocol for assessment of malaria in cross-border settings; establish networks by designating/nominating focal persons (national, state and district levels), bilateral working groups and bilateral district-level coordination committees; set up a core group (WHO and national programme focal points) for immediate coordination action as well as a regional coordination mechanism (since it was noted that several Member States have set aside funds for this purpose but were not able to utilize them due to the lack of a functional mechanism); initiate high-level action, including but not restricted to MoUs, with the aim of creating an enabling environment for local action, starting with policy agreement by different ministries; collaborate with existing cross-border mechanisms; review operational case definitions of malaria cases (indigenous/imported) by WHO that are to be stringently followed by Member States; and provide an overall framework and platform for dialogue and for identifying priority interventions to be implemented at the local level, drawing on the lessons from other regions. Later, a protocol and a template were developed and some Member States undertook related situational analyses.

    - Additional side meetings were also held in 2016 with core groups comprising heads/senior officials from the national malaria programmes from Bangladesh, Bhutan, India, Myanmar and Nepal, with participation by experts from WHO, civil society organizations and independent experts.

- Another follow-up international consultation on cross-border collaboration for malaria elimination in South Asia was held in New Delhi in November 2017, initiated by the Government of India, with a focus on developing a draft strategic framework for a South Asia subregional cross-border collaboration network for malaria elimination. Along with establishing a broad consensus around working together, meeting participants also took important steps to define how cross-border collaboration to eliminate malaria should be translated into action. Subsequent to this meeting, an important document – Addressing the challenge of malaria across international border lines: Framework South Asia Subregional Cross Border Collaboration Network – was developed.

Platforms

- As part of the Mekong Malaria Elimination Programme, an annual partnership forum has been established to share the progress and lessons learnt, and to ensure that political and financial commitments are sustained. As a platform for information exchange, the forum aims to improve coordination by sharing lessons learned from partners and country programmes. The 2017 Forum was convened in Thailand with the objective of strengthening partnership coordination toward malaria elimination in the GMS through the following measures: exchanging information (including activities and results) as well as best practices across partners; discussing the major challenges and gaps toward malaria elimination; and discussing ways to strengthen collaboration and coordination of activities at regional and country levels to meet subregional and country needs, especially with

regard to surveillance. The recommendations included further use of the regional data sharing platform to facilitate cross-border collaboration by countries, and support by WHO and partners to countries to improve surveillance and response capacity to finish the last mile of malaria elimination.

- The Mekong TES Network was formed with the participation of Member States and partners to support Member States in view of the deteriorating malaria drug efficacy situation in the GMS (see above). It has become a very strong network, with 48 sentinel sites presently in the GMS, annual meetings and field monitoring and support of the activities. With TES becoming a priority activity for all malaria programmes throughout Asia–Pacific, two further TES networks were formed – BBINS and Pacific. These are a major support and information exchange and policy update platform, with direct implications for national malaria treatment policies.
- The APLMA is an affiliation of Asian and Pacific heads of government, formed to accelerate progress against malaria and to eliminate it in the Asia–Pacific region by 2030. APLMA is a high-level political advocacy platform established to accelerate political commitment, mobilize country and regional action and track progress to reduce malaria in line with global targets. APLMA also supports the GMS malaria elimination efforts. In March 2014, APLMA established the Access to Quality Medicines and Other Technologies Taskforce to recommend options to improve access to quality antimalarial medicines and technologies. APLMA is also establishing a regional financing taskforce to explore options to close the financing gap, plus a "champions group" of influential business and high-profile individuals from the Asia–Pacific region to assist APLMA and advocate across sectors. A malaria scorecard, similar to that used by the African Leaders Malaria Alliance, is available. APLMA is open to other leaders who wish to support it on issues of regional malaria elimination.
- The goal of the APMEN is to develop and sustain a network of country partners and partner institutions to work collaboratively to address the challenges of malaria elimination in the Asia–Pacific region, with particular focus on unique regional challenges such as *P. vivax*. The objectives of APMEN are to: [a]
    - increase the political, financial and sectoral commitment to achieving and sustaining malaria elimination in the Asia–Pacific region;
    - strengthen and maintain capacity within the region and countries to effectively and efficiently implement malaria elimination strategies;
    - increase evidence-based malaria elimination strategies and programmes developed and implemented in the Asia–Pacific region;
    - strengthen collaboration with regional and global networks and organizations involved in malaria control, elimination and related activities;
    - maintain a robust country-owned, accountable and reputable network for malaria elimination in the Asia–Pacific region.
- ASEAN provides the highest level of political support for malaria elimination. ASEAN has a mandate for regional cooperation to strengthen collaboration in all aspects including trade, education, security and health. These commitments are embodied in the resolutions and declarations of ASEAN, which clearly articulate that the infectious diseases that pose serious threats to ASEAN nations are AIDS, TB, malaria, neglected tropical diseases and dengue.

[a] APMEN is composed of 15 Asia–Pacific Country Partners (Bhutan, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Lao People's Democratic Republic, Malaysia, Nepal, Philippines, Republic of Korea, the Solomon Islands, Sri Lanka, Thailand, Vanuatu and Viet Nam) that are pursuing malaria elimination (through a formal declaration), as well as leaders and experts from key multilateral and academic agencies.

- The SAARC heads of state/government signed the SAARC Social Charter at the Twelfth SAARC Summit in 2004. The Charter envisages action in several areas including health (malaria comes under Development Goal 12). The nodal ministry/committee in each Member State facilitates and monitors the implementation of the goals of the SAARC Social Charter and coordinates with other Member States to exchange ideas and information on best practices. The Delhi Declaration on Public Health Challenges, adopted by the SAARC health ministers in 2015, articulated action for prevention and control of vector-borne diseases.
- The Mekong- Ganga Cooperation initiative includes six countries, namely India and the five ASEAN countries of Cambodia, the Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam. India hosted the Sixth MGC Ministerial Meeting in 2012, with the ministers agreeing to widen collaboration into newer areas such as setting up a working group on health, among others. They noted that malaria continues to be a key public health challenge. The ministers asked senior officials to evaluate the areas of cooperation in this field between the MGC countries and convene a meeting of experts to highlight the threat of drug-resistant malaria in the Joint Ministerial Statement for the Eighth Mekong–Ganga Cooperation Ministerial Meeting in Manila in 2017. In November 2017, the Government of India organized a Mekong–Ganga meeting in New Delhi.
- Based on the recommendation of the WHO Malaria Policy Advisory Group, WHO established an ERG on border malaria in 2017 to answer key questions related to border malaria and to make recommendations to support countries. The ERG has compiled country and cross-border information on border malaria. ERG meetings were held in 2017 and in May 2018 in Geneva. The key discussion topics included: whether malaria transmission along international borders is a particular typology of malaria transmission (thus, whether malaria in border areas should be considered separately with a different suite of interventions than other areas within countries); factors affecting the epidemiology of malaria in border areas and identifying if some factors are unique to borders; whether it is important to synchronize or harmonize activities across borders in order to reduce transmission on both sides, and if yes, identifying which activities and implementation mechanisms are most useful; listing of interventions to expand access to malaria services at borders and their cost-effectiveness and impact; and future research topics. The report once finalized will provide guidance to Member States.
- Recognizing the need for high-level political commitment, the Region's Ministers of Health made a commitment towards a malaria-free South-East Asia Region by 2030 in November 2017 in New Delhi through signing the Ministerial Declaration on Accelerating and Sustaining Malaria Elimination. In parallel, the *Regional Action Plan 2017–2030. Towards 0. Malaria-free South-East Asia Region* was launched, along with a framework for a South Asia subregional cross-border collaboration network to eliminate malaria.
- In December 2017, in Nay Pyi Taw, Myanmar the countries of the GMS renewed their commitment through the *Ministerial Call for Action to Eliminate Malaria in the GMS before 2030* in response to antimalarial multidrug resistance. This was signed on 22 May 2018 in Geneva at a side event of the Seventy-first World Health Assembly, highlighting the importance of a country-led and country-owned response to malaria and UHC as "One Region, One Strategy".

- The second Global Forum of Malaria-eliminating Countries was held in Costa Rica in 2018. Members of WHO's Malaria Elimination Oversight Committee, established in 2018, also participated in the meeting. Cross-border issues were a major theme. It was proposed that WHO should explore new modalities for scaling up cross-border coordination and collaboration, using the "special intervention zone" concept. A framework for agreements should be developed for malaria cross-border activities, and a catalogue of existing signed agreements. Among other points, the meeting recommended that:
  - WHO should explore the potential for the IOM and the International Labour Organization to assist with this effort, including in terms of advising on international legal issues.
  - All people and groups at risk must be able to access malaria prevention, diagnosis and treatment. Countries should analyse barriers to accessing treatment, including discrimination, culture, distance, cost, working hours, legal status, etc. for at-risk groups and develop specific plans to address each (SDG 3 UHC framework).

Experiences with cross-border collaboration for eradication of poliomyelitis in the South-East Asia Region

In 2014, the South-East Asia Region was certified polio-free. Cross-border collaboration was crucial to this achievement.

At the national level, synchronized timing of polio vaccination campaigns, vaccination of road/train travellers and those coming by air/sea, and sharing of surveillance indicator information (information on confirmed polio cases, genetic information on viruses) were emphasized. District-level activities included coordination between district immunization officers (facilitated by WHO medical officers through direct communication between bordering districts of India, Nepal and Bangladesh), joint cross-border immunization response to outbreaks, joint physical verification of border areas for micro-planning for vaccination campaigns, sharing of information on high-risk areas, and vaccinating children in high-risk areas across the border. Also, since 2013, vaccination of road/train travellers at cross-border vaccination posts (24 x 7 x 365) at Indo–Bangladesh, Indo–Myanmar and Indo–Bhutan borders was carried out. Mandatory vaccination of travellers from and to all recently polio-infected countries 4 weeks prior to travel was also undertaken.

Modalities of coordination included national level cross-border meetings involving the ministries of health and WHO staff (mostly coordinated by the WHO Regional Office for South-East Asia), regular cross-border meetings of field medical officers supported by WHO, inter-country missions supported by WHO and United Nations Children's Fund (UNICEF), and South-East Asia Region technical meetings and bi-regional meetings.

Annex 3 – Operationalizing the Framework to maximize impact in border areas

With reference to section 2.1 of this Framework, this Annex provides further details regarding operationalization of this Framework by Member States, in alignment with their national strategic plans as well as global and regional policy and strategy documents.

Provide universal access in border areas to malaria prevention as well as malaria diagnosis and treatment services

Maximize/optimize access to malaria interventions within national boundaries, particularly in the border areas in the context of the individual country's UHC. Unrestricted access to quality health care (including malaria service provision) to all populations regardless of category or status.

- Optimum access to malaria diagnosis and treatment services – testing, treating and tracking. Effective inter-country and/or subregional malaria control and elimination efforts may often – but not always – require standardization and harmonization of policies and practices.
- Optimum coverage of personal protection and vector control (LLINs, IRS, larval source management, as appropriate to the local context). Strategies/tools for vector control can be the same or different. Different insecticides used on both sides could also reduce pressure and delay/prevent insecticide resistance.
- The existence and performance, or need for introduction, of special measures may be necessary to ensure coverage of mobile populations, including migrants, temporary workers and refugees whose presence and distribution in an administrative unit is variable or uncertain and who may not habitually have access to or use established health services.

However, ensuring access to health care and services for all populations translates to more than just overcoming access barriers. Specifically, health systems need to be sensitive to cater to the users' diverse cultural and linguistic needs. This means that front-line health workers – both at entry points and in countries where refugees and migrants ultimately work or settle – must also have the proper tools and training to manage the diverse needs of local and migrant populations. This includes, but is not limited to: appropriate language services; culturally informed care delivery tailored to the individual level; culturally tailored population services that cater to health promotion, disease prevention and disease support; and cultural support staff such as through the use of intercultural mediators, community health workers, patient navigators, etc. If evidence points to a significant problem of malaria among mobile or migrant populations crossing a national border, there needs to be, in parallel, specific cross-border malaria interventions and strategies, concerted efforts to ensure UHC of malaria (if not health) services, and sustainable operations within the country's own border area.

In the context of malaria elimination, a cross-border initiative to eliminate malaria would ultimately have the objective of interrupting transmission rapidly. Interventions employed must include certain principles in understanding population movements and malaria transmission across the mobility pathway.

- The spectrum of malaria transmission intensity can vary from very high to very low, extending from origin to destination.
- There is a need to adapt and tailor interventions to specific border areas within the same country.
- Planning of interventions must anticipate transmission dynamics and evolving approaches to cater to trends in population movements and their drivers.
- Often, in the planning stage, in the absence of a good evaluation, approaches need to be robustly designed based on local knowledge, current data and information from various sources on both sides of the border. However, the reasoning behind intervention selection should be detailed and agreed to by countries on both sides of the border.
- The impact of the interventions across borders must be jointly assessed at regular intervals using routine surveillance, sentinel surveillance and periodic surveys. If the impact of the intervention does not meet the expected targets across target districts or in certain areas within the district, the intervention itself, its alignment and implementation timing must be reassessed and altered to improve impact.

Universal coverage needs to be ensured with effective preventive interventions, appropriate parasitological diagnosis and prompt, effective treatment to all, including those migrant and mobile populations with undocumented status to reduce morbidity, mortality and transmission. (Each country should assess the extent to which migrant and mobile populations contribute to their malaria challenges, and then strategize to reach them through supportive, tailored interventions).

Case detection is to be done through passive case detection or active case detection, and either reactive (related to case or focus investigation) or proactive (screening for malaria in high-risk groups). Case treatment is to be done according to national treatment policies. Case detection and treatment could be public, private or community-based. While malaria incidence remains high, maximizing coverage through all three channels is likely to be the best approach, provided efforts are made to improve quality in the private sector and minimize out-of-pocket expenditure for patients. When cases are rapidly decreasing, the roles of each channel would be reconsidered, and possibly revised, to ensure optimal case management, surveillance and reporting in all areas.

A major concern is irrational treatment including substandard medicines in the private sector, which should be addressed through proper engagement with them, often working through NGOs. The organized private sector (for example, construction/mining companies, private tea estates, etc.) would be oriented and linked to nationally recommended guidelines. They must ensure adequate coverage by effective preventive interventions. Each country needs to determine the most appropriate role for the various types of private providers and to develop strategies accordingly.

Most countries already have well-established free community-based case management services for malaria, which are often the best solution in border areas. Community-level volunteers can provide valuable support for follow up of cases and for focal investigation or the management of outbreaks. Intersectoral cooperation and proactive and systematic collection of information on migrant and mobile populations is the key.

The existence and performance, or need for introduction of special measures may be necessary to ensure coverage of migrant and mobile populations, including temporary workers and refugees whose presence and distribution in an administrative unit is variable or uncertain, and who may not have access or may not habitually use services/intervention. Mobile teams at local levels can be considered for managing malaria amongst mobile and migrant populations. At legal and illegal entry points, malaria posts may be converged within existing border health posts or new ones may be established. Referral mechanisms for treatment need to be established. In addition, uninterrupted supplies of drugs, diagnostics and LLINs need to be maintained in all border districts. Key positions of doctors, technical staff, entomologists and field workers should be filled.

Appropriate application of vector-control interventions needs to be guided by eco-epidemiological stratification based on malaria case and entomological surveillance data. Monitoring of LLIN coverage and use by local health workers and volunteers is necessary to address low coverage levels caused by losses, or the arrival of mobile population groups in a particular risk area. IRS is to be carried out either as a mass preventive measure or as an outbreak/focus response intervention to help rapidly reduce/interrupt transmission. Locale and context-specific BCC is vital for ensuring high and correct usage and adoption of IRS. Entomological information on vector indices should be kept updated and shared with bordering countries to ensure harmonized vector control interventions.

Larval source management (LSM) should be undertaken for reducing mosquito breeding, either for primary prevention (through vector habitat modification) or for prevention of re-introduction of malaria following elimination. Decisions on the use of LSM would be guided by the larval ecology, abundance of breeding sites and their accessibility and disease burden.

Effective and coordinated cross-border surveillance and response for malaria elimination

Effective inter-country and/or subregional malaria control and elimination efforts may require, though not always, standardization and harmonization of policies and practices. At the least, there ought to be sharing of standardized data elements and indicators to enhance surveillance and response. This way, standardized data and indicators from countries and border areas can trigger timely response measures, and help coordinate the synchronization and/or complementarity of key interventions across border areas. Also, surveillance systems must be able to correctly characterize cases, i.e. whether a case is imported, introduced, indigenous or induced. The treatment and investigation, transmission foci identification and its management and clearance follow as response measures. These requirements are described in detail in WHO's *A framework for malaria elimination, 2017*.

- Use of information and communications technology for data/information sharing, viz. uploading malaria data on the website/mobile app, access-limited platforms, etc. would have provision for real time data entry and uploading data. (For the purpose, revival of the BBIN network as Bangladesh, Bhutan, India, Nepal, Sri Lanka plus Myanmar (BBINS+M) in South Asia and existing or new mechanisms in countries beyond South Asia may be considered). Standardized simple and precise format compatible with those used by the countries should be used. The guidelines and the format for exchange are to be agreed to by Member States. The platform could support monthly/quarterly district-to-district malaria updates covering issues relevant to border malaria, including caseload, numbers of patients travelling cross-border to seek treatment, outbreak investigations, intervention

reports, case reports, focus investigation and response reports, etc. Analysis related to malaria importation, vulnerability and receptivity needs to be included.

- Emphasize real time monitoring of cases using new platforms in Member States.
- WHO may facilitate creation of a website/web link for real time data sharing, or the establishment of a WHO South-East Asia Regional malaria data platform where monthly/quarterly data reporting from Member States can be shared through monthly/quarterly bulletins (presenting key information through a combination of narratives, tables, charts and maps) among Member States with emphasis on analysis, interpretation, and response. As the real time monitoring evolves, the health management information system of each Member State could feed into the Regional platform.
- Real time data sharing to be done for imported cases/outbreaks through early warning signals with the bordering districts/countries through emails/website/phone calls/SMSs, etc. The regional platform would support immediate national and local programme-to-programme cross-border notifications on significant events such as surges in caseload, population movements, the identification of drug or insecticide resistance, etc. Recommendations for action would be discussed between focal points within NMCPs and partners, as needed.
- Formalize the communication plan including clear articulation of communication channels. This includes information exchange at the national, state and district levels through meetings at agreed frequencies. Strong and weak points would be identified to improve programme management and strengthen the cross-border disease control/elimination process. Districts seeing imported cases need to communicate effectively with the source district so that the areas/populations involved could be prioritized for interventions.
- Strengthen monitoring of drug resistance. In addition, strengthening of vector surveillance and insecticide resistance should be done. Such information should be an integral part of information exchange. Enhance joint research to identify patterns of drug resistance, insecticide resistance and the development of new, safe and effective drugs.
- It is crucially important to prepare a database for migrants/travellers. Malaria-relevant cross-border population movements could be collated through meetings with provincial/state/regional malaria focal points; migration specific research; discussions during side-meetings at national and regional malaria review gatherings; and strengthening linkages with IHR, regional/global initiatives for other disease programmes like HIV and TB, polio, as well as with IOM, UNHCR, etc. This information would support the interpretation of malaria case data.

Cross-border coordination mechanism that provides the enabling environment for malaria elimination

Cross-border collaboration needs to be institutionalized. In order to facilitate cross-border initiatives, MoUs could be developed as part of a package of high-level actions aimed at creating an enabling environment for local level action and implementation. As deliberated many times, a regional coordination mechanism for cross-border collaboration including related subregional coordination activities needs to be initiated or revitalized, especially in South Asia.

Further, existing independent national malaria elimination advisory committees or new high- and local-level actions – including but not restricted to MoUs (bilateral email groups/working groups/district level coordination committees) – need to be emphasized in terms of providing an enabling environment.

As such, the paradigm of cross-border control of communicable diseases needs an integrated, collaborative and coordinated approach. This may require a dedicated coordination mechanism that could, in general, oversee:

- development of joint action plans
- regular cross-border meetings
- monitoring and evaluation of activities
- effective communication systems.

It is imperative to have a thorough understanding of the epidemiological situation of particular areas and the programmatic phase that border areas are currently in. This can be achieved by bordering districts and affected states on both sides garnering the active participation of national and local administrative levels in analysing epidemiological trends, mapping of both current and planned intervention coverages and other data (surveys, assessments, etc.) that show patterns of human mobility through that border.

Baseline assessment is critical in border areas for development of multi-country/bilateral action plans 2018–2020 and supporting M&E plans, with indicators in line with those being used by WHO and Member States. The assessment would provide robust data on border area malaria, including groups at high risk (including vulnerable, underserved and marginalized populations), the extent of malaria import/export in each district, and the different types and levels of support required in each Member State.

A joint action plan should incorporate various components.

- Prioritized coordinated 1-year action plan/s at sub-national/adjacent district and national levels, based on: (i) baseline assessment on both sides of the border; (ii) objectives, strategies and M&E plans with indicators and targets; and (iii) mutually agreeable cross-border interventions for identified "epidemiological clusters/blocks", particularly synchronized and/or complementary approaches geared towards intensified control, elimination, or prevention of re-introduction.
- Sharing technical expertise and complementary joint action in drug resistance, vector resistance and other areas.
- Joint capacity building and implementation research, e.g. new models of cross-border interventions such as border posts, health cards, etc.
- Collaboration with other existing cross-border mechanisms and relevant sectors and organizations including CSOs and their networks.

However, the critical part of border collaboration is in its implementation of action plans. Designated national and local focal points (person/s) must be authorized to coordinate/oversee the implementation of activities on both sides of the border.

Bhutan-India border. Alamy Stock Photo

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