Private Sector Business Case Studies in Bangladesh, Indonesia and Papua New Guinea
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The Malaria Elimination Initiative (MEI) at the University of California San Francisco (UCSF) Global Health Group believes a malaria-free world is possible within a generation. As a forward-thinking partner to malaria-eliminating countries and regions, the MEI generates evidence, develops new tools and approaches, disseminates experiences, and builds consensus to shrink the malaria map. With support from the MEI’s highly-skilled team, countries around the world are actively working to eliminate malaria – a goal that nearly 30 countries will achieve by 2020.

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## Acronyms

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<th>Acronym</th>
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<tr>
<td>ACT</td>
<td>Artemisinin combination therapy</td>
<td>Lao PDR</td>
<td>Lao People’s Democratic Republic</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
<td>LLIN</td>
<td>Long-lasting insecticidal net</td>
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<td>APLMA</td>
<td>Asia Pacific Leaders Malaria Alliance</td>
<td>LNG</td>
<td>Liquefied natural gas</td>
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<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
<td>MDB</td>
<td>Multilateral development bank</td>
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<td>ASEANTA</td>
<td>Association of Southeast Asian Nations Tourism Association</td>
<td>MMP</td>
<td>Mobile migrant population</td>
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<td>BCC</td>
<td>Behavior change communication</td>
<td>NGO</td>
<td>Non-governmental organization</td>
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<td>CSR</td>
<td>Corporate social responsibility</td>
<td>PNG</td>
<td>Papua New Guinea</td>
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<td>GBD</td>
<td>Global Burden of Disease</td>
<td>PPP</td>
<td>Public-private partnership</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
<td>RDT</td>
<td>Rapid diagnostic test</td>
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<tr>
<td>Global Fund</td>
<td>Global Fund to Fight AIDS, Tuberculosis and Malaria</td>
<td>RMG</td>
<td>Ready-made garments</td>
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<tr>
<td>GMS</td>
<td>Greater Mekong Subregion</td>
<td>ROI</td>
<td>Return on investment</td>
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<td>HDI</td>
<td>Human Development Index</td>
<td>SARS</td>
<td>Severe acute respiratory syndrome</td>
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<tr>
<td>HIA</td>
<td>Health impact assessment</td>
<td>SEAR</td>
<td>South-East Asia Region</td>
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<tr>
<td>IEC</td>
<td>Information, education and communication</td>
<td>SME</td>
<td>Small and medium enterprises</td>
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<td>IRS</td>
<td>Indoor residual spraying</td>
<td>WHO</td>
<td>World Health Organization</td>
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<td></td>
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<td>WPR</td>
<td>Western Pacific Region</td>
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Definition of Terms¹

Private Sector: Various definitions exist for the private sector, including those by United Nations organizations. In this report, the private sector is defined as:

- For-profit entities – commercial companies or businesses regardless of size, ownership and structure;
- Non-profit entities – not-for-profit social enterprises, non-governmental organizations, philanthropic entities;
- Business, industry and trade associations;
- Private financial institutions; and
- High-net-worth individuals and the general public.

Public-Private Partnerships: Any explicit joint program or project that involves collaboration between the public and private sectors to provide services. These include contracting between the public sector (either governments or development agencies) and the private sector (including private sector providers of commodities). Such partnerships involved stakeholders from the public sector and businesses pooling resources to complement and leverage their assets, expertise and networks to create a partnership to address the challenges at hand, such as procurement and delivery of commodities, establishment of clinics and rural health centers and delivery of healthcare.

Public Sector: National, provincial/state/regional and district/local governments, municipal administrators, local government institutions, all other government and inter-governmental agencies.

Return on Investment: Measure used to evaluate the efficiency of an investment or to indicate how much benefit (“return”) is derived from a program in relation to its cost.

¹ Fraser, N. and Druce, N., 2006. Partnerships for malaria control: engaging the formal and informal private sectors.
Executive Summary

The Asia Pacific region is working to eliminate malaria by 2030. Elimination requires the strengthening of surveillance systems to detect, report and treat every infection to prevent onward transmission of malaria and to track malaria to the last case. As the region transitions towards a malaria elimination setting, more resources – both financial and technical – will be required.

Elimination is a priority in the face of resistance to antimalarial drugs (artemisinin in particular but also its partner drugs such as piperaquine) spreading across the Greater Mekong Subregion (GMS), threatening to reverse the gains made to date against malaria as well as towards regional health security. Unless addressed, drug resistance could undermine the progress achieved, with the possibility of 22 million treatment failures, 230,000 additional severe malaria cases, and 116,000 excess deaths annually around the world. In the Asia Pacific region, artemisinin resistance is calculated to potentially cause around 9,560 extra deaths, along with excess cost of US$3.5 million and productivity losses of around US$51 million annually.

Countries in the Asia Pacific are increasing domestic financing for malaria and other health requirements, but the resources required far exceed those available. The Global Fund for AIDS, Tuberculosis and Malaria estimates that of the US$20.1 billion health resource needs of the Asia Pacific region for 2017–2019, domestic financing will contribute US$10.6 billion, and the gap in financing needs will be around US$9.6 billion. A World Health Organization-commissioned study states that malaria elimination in the GMS will cost over US$3 billion between 2015 and 2030. Compounding the problem, the region is experiencing a steady decline in donor financing for malaria, particularly in the context of low-burden and elimination settings, but also due to shifting donor priorities.

The diversification of regional countries’ economies, combined with socioeconomic changes, present a unique opportunity to enlist the help of the private sector in eliminating malaria in the Asia Pacific region. Given the large gap in financing needs, mobilizing the private sector’s expertise and resources will be crucial in realizing the 2030 malaria elimination goal. Innovative approaches leveraging the expertise and resources of the private sector, in partnership with the public sector, are some of the best approaches in confronting the challenges of a shifting malaria financing landscape and the threat of drug resistance. Innovative private sector investment models are needed to better align their incentive structures with those of traditional corporate social responsibility (CSR) models.

Investment in malaria elimination has wider implications for the health security of constituents. The resulting strengthened health systems and supply chains will be better able to respond to the health needs of the communities and be an important cornerstone of universal health coverage, while a robust surveillance system will be a crucial tool against emerging and re-emerging infectious diseases.

Study synopsis

The main objective of the report is to conduct case studies in relevant business sectors in three countries across the Asia Pacific region for private sector investment in malaria.

Specific objectives are to:

a. Identify the most promising sectors for investment in malaria control and elimination;

b. Investigate examples of private sector investments and perceptions towards such investments in malaria, and identify best practices;

c. Develop business cases for private sector investment in malaria; and

d. Provide recommendations on private sector contributions to malaria in the Asia Pacific region.

The report is intended to garner private sector perspectives on malaria elimination, as well as the motivators, enablers and incentives regarding private sector investment in malaria and their participation in public-private partnerships (PPPs).

A landscape analysis of the private sectors in Bangladesh, Indonesia and Papua New Guinea (PNG) was conducted based on regional representativeness of the focus countries – namely Bangladesh for South Asia, Indonesia for Southeast Asia and PNG for the Western Pacific region.

The most relevant and promising sectors for investment in malaria were identified based on the following selection criteria:

1. Private sector activities and operations in malaria transmission areas;

2. Malaria exposure risk of employees;

3. Private sector productivity directly impacted by malaria incidence;

4. Size of contribution to the national economy; and

5. Size of the labor force involved in the sector, along with information garnered from interviews of private sector stakeholders.
Based on the selection criteria, the three main sectors for the study were identified as: (1) agriculture and agro-businesses (plantations), (2) oil and gas and (3) travel and tourism. The sectors and their sub-sectors, particularly in agriculture and agro-business, are common across the three countries as well as in the GMS.

A total of 25 interviews with business operators and key informants were conducted by email, phone and in person between August and November 2016.

Findings
Companies across all three sectors in Bangladesh report malaria as a current health issue, while those in Indonesia and PNG do not perceive malaria as a health concern due to declining cases. Furthermore, the resurgence of dengue in Indonesia – reflecting a broader pattern across Southeast Asia – has made it the main vector-borne disease of concern for communities and businesses. The travel and tourism sector is relatively new to the health landscape but is more sensitive to health issues than the agribusiness/plantation and the oil and gas sectors. Plantations have both skilled and unskilled workers with different profiles with regard to their living arrangements, length of employment, access to insurance and awareness of health issues. The companies do not measure a return on investment (ROI) in health in financial terms. Quantifying ROI for malaria in pure economic terms may not be convincing for business owners and operators, but a value proposition can be made in terms of enhancing their social license to operate.

Companies have varying activities with regard to CSR and malaria elimination. Insecticide spraying and awareness programs are the most common, targeting not only malaria but also other health challenges such as dengue hemorrhagic fever. Larger companies have their own clinics and on-site medical staff while smaller enterprises do not have the resources to cover their workforces. Regarding private sector involvement, the majority of respondents want the public sector to lead malaria elimination efforts. Companies in Bangladesh are eager to collaborate but see malaria as a public-sector issue. Indonesian companies are also open to participation, but do not want to overlap with government services. In PNG, the companies interviewed are already actively involved in malaria programs but do not see malaria as a major health concern.

Employee welfare, safety, and productivity are the main motivators for all companies, while hotels reported guest welfare and safety as additional drivers. Implementing partners are crucial enablers for businesses, as well as having a company board that is committed to malaria elimination. Incentives can either be non-monetary (e.g., recognition awards or certifications) or monetary (e.g., tax relief and co-financing arrangements).

Analysis and recommendations
The private sector is reprioritizing its resources for malaria-related activities towards other focal areas due to declining global commodity prices and declining malaria burden in project sites. Within the vector-borne disease context, the resurgence of dengue fever and the threat of Zika are overshadowing malaria as a priority disease. Companies tend to prefer CSR activities that relate to their core business and competencies. The composition of company and foundation boards and awareness of issues are the main determinants of their scope and commitment to CSR programs. Global commodity prices, which have been in decline for the past five years, greatly affect company revenues and CSR budgets. Therefore, there is a need to examine alternative approaches or mechanisms to measure the impact of malaria when engaging with the private sector.

The government, multilateral development banks (MDBs) and partners, and regional bodies can undertake the following recommendations to expand private sector investment in malaria elimination.

The government
1. Implement tax relief and tax credit schemes, including designating foundations as aid providers, with the resulting tax exemptions diverted to expand signature programs.
2. Non-monetary incentives:
   a. Awards by relevant ministries to companies that contribute to elimination efforts, such as a “Sponsors to Regional Malaria Elimination” award.
   b. Certifications acknowledging companies’ adherence to checklists with activities to minimize malaria and other communicable diseases at the workplace and surrounding communities.
   c. Recognizing the contribution of the private sector through special mentions.
3. Extend social licensing so that companies and foundations can extend their activities.
4. Create a regulatory framework that requires companies to conduct health impact assessments (HIAs) and set aside a certain budget for CSR activities, while providing a checklist of activities for companies to know the specific areas and ways they can contribute.
5. Establish PPPs and alliances that include non-governmental organizations to provide training and commodities to the private sector, and to encourage private sector investments as part of their operational or core budget activities for sustainability. The New Ireland Provincial Malaria Alliance in PNG can serve as a potential model of an alliance approach for malaria elimination.
control and elimination. Approaching the private sector for partnerships will require:

a. Value proposition: Approach with specific proposition for potential collaboration, having checklists of what and how the private sector can contribute.
b. Encouraging in-kind initiatives: Teaming up with companies for enhanced logistical support or supply chain management. In-kind contributions increase the awareness of the issue among the target segments on the role that private sector can play.
c. Targeted messaging: Linking malaria to other vector-borne diseases and health security, and the importance of elimination in the context of drug resistance.

6. Promote community involvement with grassroots communities and keep them informed about malaria and the threat of drug resistance, which would keep malaria elimination a priority when they are consulted by corporations or foundations.

7. Incorporate lessons from the private sector such as surveillance and monitoring, logistics and supply chain management.

8. Map businesses and malaria hotspots to identify the communities and businesses at most risk and to support advocacy and resource mobilization efforts by visually highlighting the threat of malaria directly to businesses.

**MDBs and partners**

1. Reach out to corporate leadership and raise awareness among board members as a way of drawing private sector buy-in and sustaining commitment, particularly in low-endemic settings and in the face of economic uncertainties.

2. Get involved in strategic reviews of foundations to maintain momentum on malaria elimination and canvass perspectives for better partnerships.

3. Influence standard operating procedures with specific checklists of activities for protocol during suspected malaria cases, regulation of vector control activities, and standardization of behavior change communication and information, education and communication programs.

4. Create a regulatory framework that requires companies to conduct HIAs, address systematically the assessment outcomes and set aside a certain budget for CSR activities.

5. Promote HIAs, which are currently not standard practice across much of the Asia Pacific region. MDBs can cooperate with national governments to standardize the requirements for health impact assessments and provide technical support to businesses to ensure that such assessments are standardized.

6. Confer recognition to companies that contribute to malaria elimination efforts, either through compliance with regulations or through CSR activities, in the form of awards, special mentions and acknowledgement.

**Regional entities**

1. Leverage the Association of Southeast Asian Nations (ASEAN), its associated entities and other platforms (e.g., the ASEAN Sustainable Development Committee, the ASEAN Tourism Association, and relevant health clusters under the ASEAN Senior Officials Meeting on Health Development) to create and maintain regional momentum and commitment from political leadership. The ASEAN Secretariat based in Jakarta has shown willingness to take malaria elimination on board as an issue and integrate it into its working groups. Indonesia can also serve as a platform to address the ASEAN policy framework through working groups focusing on topics like tourism. Through these platforms, there is potential and opportunity to reach out to other businesses and stakeholders for elimination efforts.

2. Leverage regional industry platforms to reach out to businesses, and have region-wide industry-specific awards for businesses that contribute to malaria elimination efforts. For example, the Pacific Asia Travel Awards can be a platform to provide incentivized awards and recognition for tourism sector businesses.

3. Have regional entities, business associations and industry gatherings give awards and certifications in recognition of companies’ contribution to malaria elimination efforts, in conjunction with governments.

4. Support new regional platforms, such as a new private sector platform for malaria elimination in Bangladesh, using identified private sector champions. Regional platforms that link the public and private sectors will be crucial in ensuring that PPPs and alliances are able to meet their potentials and contribute to elimination goals.

5. Involve politicians (e.g., local parliamentarians and members of local and national governments) to elevate specific issues and affect policy change to raise awareness to a wider audience on the national level, especially in countries where malaria is not widely endemic and confined to remote areas.

6. Use health security as a frame for malaria and drug resistance, casting the issue in a wider context to make a stronger case for the private sector to invest. Encourage the private sector to consider the health of its workforce and surrounding communities beyond a single issue, which will additionally promote goodwill to shareholders and the government.
Mobilizing the private sector will be crucial for the region to achieve malaria elimination by 2030. Companies across the region are already engaged in malaria interventions mostly due to their impact on reducing absenteeism caused by illness and improving productivity. However, there is a loss of momentum and a setback to private sector involvement when malaria cases and the economy decline. There is an urgent need for the public sector to re-engage the private sector while recognizing the distinct ways in which the private sector operates, which alter expectations for involvement in malaria elimination. While some companies will continue activities to promote goodwill with shareholders and governments, effectively involving the private sector will require better engagement strategies aligned with an improved incentive structure.
1. Introduction

1.1. Scope and objectives
This report aims to develop business cases for private sector investments in malaria elimination by drawing from the perspectives of the private sector and other relevant stakeholders engaged in public-private partnership (PPPs). The report’s context is the Asia Pacific region’s goal to eliminate malaria by 2030, and the need to address the emergence of drug-resistant malaria in the Greater Mekong Subregion (GMS).

The specific objectives of the report are to:

a. Identify the most promising sectors for investment in malaria control and elimination in Bangladesh, Indonesia and Papua New Guinea (PNG);

b. Investigate examples of private sector investments and perceptions towards such investments in malaria, and identify best practices;

c. Develop business cases for private sector investment in malaria in the three selected countries; and

d. Provide recommendations on private sector contributions to malaria in the Asia Pacific region.

1.2. Rationale
The private sector has an important role to play in the Asia Pacific region’s efforts to eliminate malaria by 2030. As the region moves towards elimination, more resources will be required, which in part will be met by increased domestic financing by many governments within the region. However, other innovative approaches and new partnerships will be needed to realize the malaria elimination goal. The Asian Development Bank (ADB), the Asia Pacific Leaders Malaria Alliance (APLMA), and other partners are looking to engage the private sector as an important partner in achieving success.

The private sector can play a major role in malaria control, including surveillance, procurement of medical services, distribution of resources and provision of innovative solutions. PPPs are crucial in delivering malaria interventions, developing new products (e.g., Medicines for Malaria Venture) and mobilizing resources for malaria elimination.

As such, there is a need to better understand the underlying factors driving, enabling and motivating private sector involvement in malaria elimination, and to document concrete case studies to promote further investment. There is also a need to understand the various approaches where the private sector can be a partner for malaria elimination.

1.3. Methodology
The paper draws on literature reviews, document and Internet-based research, and interviews with private sector partners in the identified countries to determine the main motivators, enablers and incentives for private sector investment in malaria elimination efforts.

Interviews
Relevant stakeholders and interviewees were identified for the interviews. Interviews were conducted by email, phone and in person between August and November 2016.

A total of 25 interviews were conducted, comprising 16 stakeholders (i.e., three airlines, five hotels, one oil and gas company, one mining company and six plantations) and 10 key informants from various associations and foundations. Face-to-face interviews were conducted in each country using a standard set of interview questions specifically developed for each of the abovementioned sectors.

Interviewees were selected based on referrals provided by the Malaria Elimination Initiative of the University of California, San Francisco Global Health Group and through chain referrals from other networks and relevant partners. A preliminary interview list is found in Annex 1.

Snowball sampling (or chain referral sampling) and purposive approaches were used for the study. Snowball sampling is a sampling method used by researchers to identify subjects by asking other subjects to nominate persons to be interviewed. This method is particularly useful for target populations that are difficult to reach. The main value of snowball sampling is in obtaining a small number of linked respondents or where some degree of trust is required for initial contact. A snowball sampling approach can build on emerging themes for analysis. It is found to be economical, efficient and effective in order to produce in-depth results. Purposive sampling is used in qualitative research for the identification and selection of information-heavy cases for the most effective use of limited resources, which in this particular case were time and human resources.

2 One enterprise comprised of both a plantation and a hotel.


4 Ibid., p. 3.

An interview guide was developed and a standard questionnaire written in English was used for the interview process for each of the three sectors (Annex 3). The interviewers were briefed to minimize biases and to orient the interviewees on the topic of malaria elimination and the roles played by the private sector. The responses from the interviews were compiled, and a code list was constructed. Once interview data were entered into ATLAS.ti and the text coded, similar codes were sorted and analyzed together to determine common themes that emerged from the data.

**Limitations**

Snowball sampling may not generate a group of interviewees that is fully representative of the target population. Purposive sampling poses the risk of bias and over-representation. Data collection was also dependent on different teams conducting the interviews across the three countries. While the questionnaire was standardized, there may be differences in the interviewer approaches and interviewees’ understanding or perception of the questions posed. In addition, the responses may vary across interviews conducted face-to-face, through email and by phone.

Given the scope and geographic scale of the paper, the study was limited by time constraints, access to key stakeholders and distance to sites in the three countries. Certain plantations were remote and distant, particularly in border areas. Companies were also wary that studies and interviews might intrude and reveal information which they consider as trade secrets or sensitive information.

### 1.4. Structure of the report

- **Section 2** introduces the challenge at hand and provides background on malaria elimination in the Asia Pacific region.
- **Section 3** provides background on Bangladesh, Indonesia and PNG, particularly on each country’s economy, private sector and malaria and broader health status.
- **Section 4** covers the selection process for the three industrial sectors that are the focus of this report, as well as the rationale for their selection.
- **Section 5** lists the major findings regarding private sector perspectives on investing in malaria elimination.
- **Section 6** analyzes the information garnered to understand the factors influencing private sector involvement and investment in malaria control and elimination.
- **Section 7** provides recommendations based on the findings and analysis.
- **Section 8** concludes the paper with re-emphasis of the report’s findings and recommendations.

The report is supported by the following annexes:

- **Annex 1** is the list of interviewees in Bangladesh, Indonesia and PNG.
- **Annex 2** is the summary of responses from the interviewees.
- **Annex 3** contains the interview guides and questionnaires sent out to the three respective sectors (i.e., plantation, oil and gas and travel and tourism).
2. Malaria Elimination: Regional Background and Context

2.1 Malaria background

Malaria, one of the world’s major communicable diseases, is targeted for elimination in the 21st century. The United Nations’ Sustainable Development Goals calls for the end of malaria alongside other major epidemics by 2030. In line with this, the World Health Organization (WHO) has also set the goal of reducing global malaria incidence and mortality by 90% by 2030. Within the Asia Pacific region, APLMA was formed in November 2013 to accelerate progress against malaria and to eliminate it by 2030.

Globally, malaria cases have declined by 22% since 2000 and 14% since 2010, while malaria deaths have declined by 50% since 2000 and 22% since 2010. In the Asia Pacific region, malaria is endemic in 20 countries with over 2 billion people at risk, and around 260 million people are living in high-transmission areas. In 2015, the WHO South-East Asia Region (SEAR) accounted for 7% of global malaria cases and 6% of estimated global malaria deaths – 14.4 million cases and 26,200 deaths. The WHO Western Pacific Region (WPR) saw 1.2 million cases and 1,500 malaria deaths, with PNG accounting for 77% of all reported cases. The main malaria parasite in both regions is Plasmodium falciparum. P. vivax accounted for 34% of cases and 7% of deaths in SEAR, and 58% of cases and 17% of deaths in WPR. India, in SEAR, accounted for 49% of global P. vivax malaria cases and 51% of global P. vivax malaria deaths in 2015.

Apart from India, Indonesia, Myanmar and Thailand, regional malaria-endemic countries reported a decrease of malaria incidence of more than 75% since 2000. The GMS, traversing both SEAR and WPR, carries a heavy malaria burden and is the historical and current hotspot for the emergence of drug-resistant malaria. Resistance to artemisinin has been confirmed in five GMS countries – Cambodia, Lao People’s Democratic Republic (Lao PDR), Myanmar, Thailand and Viet Nam. In most sites, patients with artemisinin-resistant parasites have been found to still recover after treatment with artemisinin combination therapy (ACT) containing an effective partner drug. However, along the Thai-Cambodian border, P. falciparum has been found to be resistant to almost all available antimalarials. The Global Plan for Artemisinin Resistance Containment recommends malaria control and elimination to stop the spread of drug-resistant parasites.

In line with this recommendation, there is momentum in support of malaria elimination in order to address the emergence and spread of artemisinin- and multidrug-resistant malaria in the GMS. Unless addressed, drug resistance could undermine the gains made to date against malaria, with the possibility of 22 million treatment failures, 230,000 additional severe malaria cases, and 116,000 excess deaths annually around the world. In the Asia Pacific region, artemisinin resistance is calculated by one study to potentially cause around 9,560 extra deaths, along with excess cost of US$3.5 million, and productivity losses of around US$1 million annually. Another study predicts 100,000 more deaths and 250,000 severe cases annually, with huge economic, social and human impacts.

Malaria elimination is the interruption of local mosquito-borne malaria transmission. Countries within the region are at different stages on achieving malaria elimination; the rate of progress will depend on the resilience of national health systems, the level of investment in malaria control and other factors such as biological determinants, the environment, and the social, demographic, political and economic situations of each individual country.

In countries with high malaria burdens and high-to-moderate rates of malaria transmission, national malaria control programs work to maximize the reduction of malaria cases and mortality. Countries progress towards elimination by achieving reductions in malaria case incidence and mortality rates. For countries approaching elimination, surveillance needs to be greatly enhanced in order to detect, report and treat every infection to prevent onward transmission of malaria. Better and more precise data will be needed to track malaria to the last case, usually in remote areas.

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6 SGD 3.3: “By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.”
9 Ibid.
10 Ibid.
11 Ibid.
16 APLMA, 9 April 2015. "Widespread artemisinin resistance could wipe out a decade of malaria investment."
18 Ibid.
21 Ibid.
2.2 Changing economic and health landscapes

The Asia Pacific region continues to enjoy economic growth despite recent tempering. Real gross domestic product (GDP) growth in China, India and member states of the Association of Southeast Asian Nations (ASEAN) is expected to be around 6.2% for 2016–2020. The region is undergoing rapid economic growth and industrialization, led by China and India – the two fastest growing major economies in the world. The economies of the 10 ASEAN member states collectively form the world’s seventh largest economy. East Asia saw reductions in extreme poverty from 80% in 1981 to 7.2% and South Asia from 58% to 18.7% in 2012.

This economic growth has been driven mainly by both economic liberalization by governments and the growth and success of the private sector. The private Asian companies such as AirAsia, Samsung, the Tata group, and Alibaba have become internationally recognizable brands. As the contribution and role of the private sector increases, they are also becoming increasingly involved in social development efforts across Asia. It has been acknowledged that the private sector plays an essential role in addressing health and development priorities in the region and globally.

Along with economic growth, the continent has also seen major gains in health and social development indicators. Life expectancy has grown by more than 15 years between 1970 and 2010. Child mortality fell by two thirds, from over 7.214 million in 1990, to 2.406 million in 2015. Various transitions – in terms of health and demographics – are also occurring as countries move up the income ladder.

The Asia Pacific region’s continued economic development presents both opportunities and challenges with regards to health and development, including malaria elimination. On one hand, growth in wealth and an improvement in living standards mean that the region has more resources at its disposal. Governments, philanthropic organizations, the private sector and communities will be able to mobilize more domestic funding, and constituencies will value and demand investments in health as public goods. On the other hand, rising wealth means that the Asia Pacific region will become less prioritized for development assistance for health, while many countries still remain heavily dependent on such assistance.

The donor financing landscape is changing, and competition for donor assistance for health is increasing. Within Europe, donor countries are re-prioritizing their aid budget to accommodate demands from new challenges such as the refugee crisis, climate change, counterterrorism, and security issues. Political and policy changes in other donor countries also pose similar risks. In this context, funding criteria for multilateral and bilateral donors remain focused primarily on low-income settings with heavy disease burdens.

As regional countries become more interconnected through increased infrastructure and air links, health security is also becoming a major focal point for governments. Recent outbreaks with severe acute respiratory syndrome (SARS), H5N1 (“avian flu”) and H1N1 (“swine flu”) influenza, Middle Eastern respiratory syndrome coronavirus and Ebola have highlighted the need for governments to invest in health security to tackle emerging and re-emerging infectious diseases. ASEAN – the regional multilateral body incorporating most of the GMS countries (except the Yunnan Province and Guangxi Zhuang Autonomous Region of the People’s Republic of China) – along with other countries in Southeast Asia such as Indonesia are increasing their involvement in health and health security issues.

Dengue fever has seen a major resurgence across the world with an estimated 3.9 billion people at risk. According to the WHO, the number of reported dengue cases globally increased from 1.2 million in 2008 to 3.2 million in 2016.
Zika virus disease, commonly known as Zika, has seen a surge in global interest following the latest outbreak in Brazil in 2015, where the disease has been associated with Guillain-Barré syndrome and microcephaly. Human infections have been recorded in the Asia Pacific region since the 1960s, and 19 countries in the region have reported locally transmitted cases since 2007. According to the WHO, 2.6 billion people worldwide live in areas with possible Zika transmission. However, there is also a belief that there is a high level of immunity among adults within the region.

The resurgence and shifting epidemiology of dengue and the emergence of Zika in the context of declining malaria cases can pose both opportunities and challenges for malaria elimination. Linking malaria to dengue and other vector-borne diseases and health security will serve to maintain or increase momentum towards regional elimination, supporting responses to emerging infectious diseases and improve national and regional systems’ ability to cope with health security threats.

2.3 Malaria elimination and health security

As a major infectious disease, malaria occupies an important node in the global health security landscape. Eliminating malaria while the available medicines are effective is critical to addressing multidrug-resistant malaria as found along the Thai-Cambodian border. The alternative would be a massive reversal of the gains made.

Investing in malaria elimination has direct positive contribution to the health security of the countries and communities involved. The expansion of malaria interventions can be used as an entry point for strengthening health systems, including maternal and child health services and laboratory services, and to build stronger health information and disease surveillance systems.

Strengthening malaria-endemic countries’ surveillance systems – such as through a network of malaria volunteers and workers – for elimination also improves the capacity to detect and report disease outbreaks, respond faster to public health emergencies, and collaborate across borders. Vector control efforts, along with behavior change communication (BCC) and information, education and communication (IEC) programs, will have positive impacts not only for malaria but other vector-borne diseases such as dengue fever, which has seen a major resurgence across the Asia Pacific.

The efforts to ban the use of oral artemisinin monotherapies and ensure access to quality medicines will also raise the standard of food and drug monitoring agencies. The supply chains developed and streamlined for malaria elimination will be able to better deliver other medicines and commodities such as vaccines and nutrition supplements. Furthermore, ensuring vulnerable and remote communities have access to health centers will have health dividends beyond malaria, such as in reproductive and neonatal health, other infectious diseases and the provision of primary healthcare. Finally, the strengthened health system will be able to better deliver universal health coverage, and the funds no longer needed for malaria down the line can be redirected to tackle other pressing health challenges.

2.4 The role of the private sector

The private sector – which includes corporations, small and medium enterprises, and private healthcare providers – has considerable resources and networks at its disposal, which are already being tapped for health interventions, including malaria elimination. Examples of private sector solutions to major health challenges include:

- **Technology transfer:** After developing technology to produce mosquito nets with built-in insecticide, Sumitomo Chemical transferred the technology to stimulate local production and distribution of the nets, which also contributed to sustainable local employment and economic development.

- **Drug development:** Fujifilm collaborated with the French government to test the effectiveness of an influenza medicine produced by an acquired subsidiary as a potential stop gap drug against Ebola during the West African Ebola outbreak. The company also worked to make the medicine available to infected patients in Guinea.

- **Supply chain management:** In 2016, NEC Corporation joined a pandemic supply chain management scheme by the World Food Programme.

- **Drone delivery:** AeroSense, a drone joint venture company between Sony Mobile and Japanese robotics company ZMP, is exploring a partnership with the government of Zambia to begin using drones to deliver medicines and samples to hard-to-reach rural communities.

- **Commodities delivery:** Coca Cola collaborates with non-governmental organizations (NGOs) in hard-to-reach areas to distribute condoms and educational supplies. 
materials for HIV/AIDS and bed nets and medicines for malaria using the company's delivery networks throughout Africa.\textsuperscript{39,40}

PPP that leverage the resources, networks and expertise of both the public sector and private sectors present the best approach to maximize the impact of limited resources in order to address the threat of drug resistance and achieve the goal of eliminating malaria within the Asia Pacific region by 2030.


3. Countries Background

This section is a deep dive into the three focus countries selected based on regional representativeness – namely Bangladesh for South Asia, Indonesia for Southeast Asia and PNG for the Western Pacific. These countries are endemic for malaria, albeit with varying burdens, and are developing countries with large populations.

3.1 Bangladesh

Economy

Figure 1. Brief overview of the Bangladesh economy

- Population: 161 million
- GDP: US$195 billion
- GDP (purchasing power parity): US$536 billion
- GDP per capita: US$1,211.7
- GDP per capita (purchasing power parity): US$3,332.8
- GDP growth rate (2015): 6.6%

Labor force by occupation (2010)

- Agriculture: 13%
- Services: 47%
- Industry: 40%

GDP contribution by sector, 2015

- Agriculture: 15.5%
- Services: 56.4%
- Industry: 28.1%

Bangladesh is an emerging economy with a population of 161 million – the eighth largest in the world – and with a nominal GDP of US$195 billion in 2015 (Figure 1). The country is part of the “Next Eleven,” a group of 11 economies identified by Goldman Sachs as those having high potential to become major economies in the 21st century. Since launching economic reforms in the early 1990s, Bangladesh has seen stable economic growth and business-friendly governments (Figure 2). Its economy is export oriented, with the garment industry being the predominant sector and accounting for 93% of exports in 2014 (Figure 3).41

Agriculture is the largest employer, engaging 47% of the labor force and contributing approximately 15.5% of the economy. In recent years, the sector has enjoyed strong growth due to extensive irrigation, high yielding crop varieties, more efficient markets and mechanization alongside policy reforms and investments in agriculture research, human capital and infrastructure. It also plays a key role in Bangladesh’s economic growth.42 Primary crops include rice (Bangladesh is the world’s fourth largest producer), jute (the world’s top producer), tobacco and tea, while potato, maize, wheat and fresh fruits are also important crops. Rice and most crops are grown in the Ganges delta area, while tea is grown in the country’s east, along the border with India and near Myanmar.

Although Bangladesh’s location at the Ganges delta has conferred an agricultural advantage, both the sector and the low-lying country are vulnerable to natural disasters such as floods and cyclones, along with the threat from rising seawater levels due to climate change. Scientists predict that by 2050, 17% of Bangladesh could be submerged and crop production could fall by 30% due to increased intensity and frequency of cyclones and salt water inundation.

Natural gas plays a dominant role in Bangladesh’s energy mix. The country has approximately 0.2 trillion cubic meters of proven natural gas reserves and is the eighth largest natural gas producer in the Asia Pacific region. The bulk of exploration and production remains restricted to onshore fields, but the waters off Bangladesh are estimated to be potentially rich in natural gas deposits. The main gas fields are in the northeast of the country, near the border with India. Production from the onshore fields is expected to plateau in the coming years, prompting the government to seek investment for offshore projects. However, the country has attracted low interest in its offshore oil and gas exploration tenders. The oil and gas industry is dominated by the state energy company, Petrobangla, to which all international oil companies must sell natural gas at a government-determined price. Chevron is the leading international oil company.

The ready-made garments (RMG) sector is the main export industry in Bangladesh (Figure 2). Valued at US$25.5 billion in 2014–2015, the industry employs over four million Bangladeshis, with women from rural communities making up 80% of the workforce. While the RMG sector has been hailed as the cornerstone of Bangladesh’s efforts to climb up the development ladder, the sector has also been subject to concerns of safety, ethical wages and child labor.

Bangladesh attracted 125,000 international tourists in 2015. International tourism arrivals has been declining from a peak of around 467,000 in 2008, while domestic tourism has increased due to an expanding middle class. In 2014, the direct and total contribution of travel and tourism to the Bangladeshi economy was 1.9% and 5.5% respectively.

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4.28 million people (3% of the population) live in high malaria transmission areas. It had 6,608 confirmed cases, and nine reported deaths (8% of the population) live in low malaria transmission areas, while a further 12.4 million people (3.6% of total employment) were either indirectly supported by the industry numbered 1.984 million jobs (3.6% of total employment).47

Bangladesh has emerged largely unscathed from the global financial crisis, though it remains vulnerable because its exports are not diversified, and it depends heavily on migrant workers’ remittances, which make up around 8% of GDP in 2015. The Economist Intelligence Unit predicts that the Bangladeshi economy will grow at a fairly rapid pace, with a 4.6% annual average growth until 2050. However, it will face a plethora of challenges in the longer term, due to significant levels of poverty and corruption. One of the issues will be to raise the quality of the workforce.

**Private sector**

The private sector – particularly the RMG sector – has been a major driver of Bangladesh’s strong economic growth since the 1980s. The private sector accounts for 93% of GDP, 81% of total investment, 94% of consumption expenditure and 80% of domestic credit. Private sector development, particularly in the fields of garments, textiles and foodstuffs, has been the main engine of economic growth and employment generation.48

Recent economic growth alongside insufficient government investment has led to a severe infrastructure deficit, as demand for energy, utilities, transport and telecommunications services increased. Inadequate power supply is seen as the main obstacle to private sector development. The country’s deteriorating political and security situation, along with political agitation and strikes, have also been impediments in private sector development. Low education achievement, limited literacy skills and skills gaps, also hamper productivity and efforts to modernize the economy. The government’s 7th Five Year Plan for 2015–16 to 2019–20 aims to diversify the country’s exports while addressing the major issues hampering Bangladesh’s economic and private sector development.

**Malaria and healthcare sector**

According to the 2015 World Malaria Report, an estimated 4.28 million people (3% of the population) live in high malaria transmission areas, while a further 12.4 million people (8% of the population) live in low malaria transmission areas. It had 6,608 confirmed cases, and nine reported deaths in 2015 (Table 1).

| Table 1. Malaria cases and deaths in Bangladesh, 2000–2015 |
|----------------|----------------|----------------|----------------|----------------|
| **Confirmed Cases** | 437,838        | 290,418        | 91,227         | 6,608          |
| **Reported Deaths** | 484            | 501            | 37             | 9              |


The country also has a high dengue burden. According to the Global Burden of Disease (GBD) study, Bangladesh had 2,764,726 dengue cases and 178 dengue-related deaths in 2015. The healthcare system of Bangladesh has four key actors defining the structure and function of the system: the government, the private sector, NGOs and donor agencies. The Bangladeshi government intends to achieve universal health coverage by 2023.

In 2014, total expenditure on health amounted to around 2.81% of GDP, with government expenditure accounting for 27.9% of total health expenditure and 5.65% of the government budget. Out-of-pocket health expenditure formed 67% of total health expenditure. Government spending on health was around US$8.6 per capita. Despite its low Human Development Index (HDI) score (i.e., 0.57, ranked 142nd out of 188 jurisdictions),49 Bangladesh has a relatively higher life expectancy (71.6 years at birth) compared to its HDI cohorts such as Lao PDR and Cambodia. The country is facing the double burden of communicable and non-communicable diseases, including the emergence and re-emergence of diseases, due to epidemiological and demographic change.50

The WHO describes Bangladesh as having a shortage of health workers, and the existing workforce is under-skilled and inequitably distributed. The country has 0.356 doctors and 218 nurses and midwives per 1,000 people, according to the World Bank. For 2015, infant mortality was 31 per 1,000 live births and under-five mortality at 38 per 1,000 live births.51 The maternal mortality ratio was 176 per 100,000 live births.52 An estimated 62% of medical doctors work in the private sector, and the formal health workforce is mostly concentrated in the urban areas. Rural areas face retention and absenteeism challenges with regards to human resources for health.53 Informal healthcare providers include semi-qualified and unqualified providers.

51 World Bank, Mortality rate, infant (per 1,000 births) (http://data.worldbank.org/indicator/SP.DYN.IMRT.IN), Accessed 21 October 2016. World Bank, Mortality rate, under-5 (per 1,000 births).
52 World Bank, Mortality rate from communicable, maternal, per 100,000 live births (http://data.worldbank.org/indicator/SH.STA.MMRT), Accessed 21 October 2016.
53 Ibid.
unqualified allopathic providers, as well as traditional and faith healers. Porous borders and heavy irregular migration of people through the borders pose trans-border health challenges including the potential for imported malaria cases from either side.

The RMG sector in Bangladesh is significant as a major foreign exchange earner and employer of rural women, including those from malaria endemic regions. Hence, the RMG sector can be one of the potential partners. For example, one of the initiatives is Business for Social Responsibility’s HERproject, a multi-stakeholder approach bringing together international companies, supplier factories, farms, and women workers to improve women’s health awareness and access to health services through sustainable workplace programs.54

3.2. Indonesia

Economy

Figure 4. Brief overview of the Indonesia economy

Population: 252.8 million
GDP: US$862 billion
GDP (purchasing power parity): US$2,842 billion
GDP per capita: US$3,346.5
GDP per capita (purchasing power parity): US$11,035
GDP growth rate (2015): 4.794%

Labor force by occupation (2010)

Agriculture 13.2%
Services 47.9%
Industry 38.9%

GDP contribution by sector, 2015

Agriculture 13.8%
Services 44.8%
Industry 41.4%

Indonesia, with an estimated population of 252.8 million and national GDP of US$862 billion in 2015,55 has the 4th and 16th largest population and economy in the world, respectively (Figure 4).56 At purchasing power parity, Indonesia is the world’s eighth largest economy. It is an emerging economy and member of the G20. Since recovering from the 1997 Asian financial crisis, Indonesia has seen strong economic growth averaging 5.3% since 2000 (Figure 5).57 It is also part of the “Next Eleven” – 11 economies identified by Goldman Sachs as having high potential to become major economies in the 21st century.

Figure 5. Indonesia GDP growth rate

Source: World Bank

Agriculture remains a major employer, with an estimated 40 million Indonesians working in the sector. Major agricultural products include palm oil, rubber, cocoa, coffee, tea, cassava, rice and tropical spices.58 Indonesia is the world’s largest producer of palm oil; second largest producer of rubber, cassava and coconut oil; third largest producer of rice and cocoa; and a major producer of coffee, tobacco and tea. The palm oil and rubber industries are major employers in rural Sumatra and Kalimantan.

Natural resources form a large part of Indonesia’s economy (Figure 6).59 Indonesia is an important producer of hydrocarbons and is a member of the Organization of Petroleum Exporting Countries. The country has approximately 3.23 billion barrels in proven crude oil reserves

55 Statistic Indonesia, 18 February 2014.
In 2015, Indonesia produced 825,000 crude oil barrels per day. However, since the 1990s, Indonesia has seen a steady decline in crude oil production due to a lack of investments and has also seen an increase in domestic consumption. Indonesia became a net oil importer in 2004. In addition, Indonesia is a major exporter of coal, with an output of 461 million tons oil equivalent in 2015. It is also a major producer of minerals, including gold, copper and nickel. Grasberg Mine, the world’s largest gold mine with an estimated 67.4 million ounces in reserves, is located in the Indonesian province of Papua and is operated by Freeport-McMoRan Copper & Gold Inc. Indonesia attracted approximately 9.5 million foreign visitors in 2015, and aims to double tourism arrivals and earnings by 2019. Recent years have seen a steady increase in tourism arrivals, due to marketing and also partly to a reduction in high-casualty terrorist incidents targeting tourist hotspots. In 2016, the main source of tourist arrivals to Indonesia were China (12.4%), Malaysia (12.1%), Singapore (11.4%), Australia (11%) and Japan (4.1%). According to the Australian Bureau of Statistics, Indonesia was the second most popular destination for Australians in 2016. Approximately 1.25 million Australians visited Indonesia in 2016, a 546.6% increase over a 10-year period. This trend is expected to continue, which can potentially cause malaria to cross borders and reach Australia.

In 2014, the direct and total contribution of travel and tourism to the Indonesian GDP was 3.2% and 9.3% respectively. Direct contribution amounted to Rp325.467 trillion (US$25 billion), while total contribution accounted for Rp946 trillion (US$72.5 billion) in 2014. Tourism directly employs approximately 3.32 million Indonesians (2.9% of the total workforce).

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63 A series of terrorist attacks targeted tourism hotspots in the 2000s - Bali in 2002 and 2005, and Jakarta with the Ritz Carlton/ Marriott bombings in 2009. In January 2016, a number of explosions and a gun battle occurred in a major Jakarta shopping district.
of total employment) while total employment including jobs indirectly supported by the industry amounted to 9.8 million jobs (8.4% of total employment).66

Weak infrastructure, poor transparency, legal system weakness, regulatory uncertainty, shortage of skills and labor market issues continue to be perceived as major challenges to doing business in Indonesia.67 Under the leadership of President Joko Widodo, Indonesia has moved to tackle governance issues under a challenging environment.68 The Economist Intelligence Unit predicts that Indonesia will maintain real GDP growth averaging 4.2% a year between 2015 and 2050. The relatively young population will facilitate expansion in the working-age population, while improvements in the business environment – notably in reducing corruption – will encourage investment and increase productivity.69

Private sector
The private sector is a major component of the Indonesian economy – accounting for 60% of the GDP and supporting nearly 70% of total employment in the country.70 The formal private sector consists of large business conglomerates (e.g., Sinar Mas, Astra International and Lippo Group), state-owned enterprises (e.g., Pertamina, Telekomunikasi Indonesia and Bank Rakyat Indonesia) and foreign investors (e.g., Chevron and Unilever), while an estimated 54% of the private sector enterprises, mainly micro and small enterprises, operate in the informal sector.71

Indonesia has seen an overall increase in its ease of doing business and ranks 109 out of 189 countries in the World Bank’s 2016 ranking. However, it lags behind other major Southeast Asian economies such as Singapore (1), Malaysia (18), Thailand (49), Viet Nam (90) and the Philippines (103).71 The World Economic Forum Global Competitiveness Report 2015–2016 lists Indonesia as the 37th most competitive economy globally.73

Malaria and healthcare sector
Indonesia has a high malaria burden. According to the World Malaria Report 2016, approximately 30.3 million Indonesians (12% of the population) live in high malaria transmission areas while another 36.9 million (14%) live in low-transmission areas. Indonesia had 217,025 confirmed malaria cases and 157 reported deaths in 2015 (Table 2).

Table 2. Malaria cases and deaths in Indonesia, 2000–2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Confirmed Cases</th>
<th>Reported Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>256,993</td>
<td>833</td>
</tr>
<tr>
<td>2005</td>
<td>315,394</td>
<td>88</td>
</tr>
<tr>
<td>2010</td>
<td>465,764</td>
<td>432</td>
</tr>
<tr>
<td>2015</td>
<td>217,025</td>
<td>157</td>
</tr>
</tbody>
</table>


Indonesia also has a major dengue burden; according to the GBD, Indonesia had 27.9 million dengue cases, with approximately 8,730 deaths in 2015 (compared to 18.6 million cases and 6,900 deaths in 2010). This reflects the resurgence of dengue within the Asia Pacific region.74 Total expenditure on health accounts for 2.85% of GDP, with government expenditure accounting for 37.78% of total health expenditure and 5.73% of the government budget. Out-of-pocket health expenditures were 46.9% of total health expenditure. The government spent around US$37.55 per capita on health. In January 2014, Indonesia launched Jaminan Kesehatan Nasional, a compulsory national health insurance system with the aim of making basic healthcare available to all Indonesians by 2019. According to the World Bank, Indonesia has 0.204 physicians and 1.4 nurses and midwives per 1,000 people. Indonesia has an HDI of 0.684 and ranks 110 out of 188 physicians and midwives per 1,000 people. Indonesia has an HDI of 0.684 and ranks 110 out of 188 countries.75 Infant and under-five mortality rates stand at 23 and 27 per 1,000 live births respectively.76 Maternal mortality ratio stood at 126 per 100,000 live births.77 Zika cases have not been reported as yet in Indonesia, but neighboring countries such as Singapore, Thailand, PNG and Myanmar have reported cases. Indonesia has however been listed as one of the countries most vulnerable to the spread of Zika in a study conducted by the Lancet.78

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**Sources:**

68 Financial Times, 12 October 2015. “Jokowi stumbles along the road to reform.”
71 Rahman, 2016.
76 World Bank, Mortality rate, infant (per 1,000 births) (http://data.worldbank.org/indicator/SP.DYN.IMRT.IN), Accessed 21 October 2016. World Bank, Mortality rate, under-5 (per 1,000 births).
3.3. Papua New Guinea

Economy

Figure 7. Brief overview of the Papua New Guinea economy

Population: 7.7 million
GDP: US$15.6 billion
GDP (purchasing power parity): US$21.3 billion
GDP per capita: US$1,979.8
GDP per capita (purchasing power parity): US$2,694.1
GDP growth rate (2015): 3.1%
Labor force by occupation (2010)

PNG’s economy remains dominated by two sectors: the agricultural, forestry, and fishing sector, which engages most of the labor force (with the majority being informal), and a small formal extraction sector (minerals and energy) that accounts for the majority of the country’s export earnings and GDP.81

Cocoa, palm oil, coffee, tea, bananas and copra are the main export crops (Figure 9).82 Between 71–85%83,84 of the workforce is engaged in the agricultural, forestry and fishing sectors, mainly on small-scale, subsistence levels. However, there are also a number of large agribusinesses that combine both production and refinery of cash crops. Recent data indicate a significant drop in agricultural exports, due to both weak commodity prices and lower production levels driven by environmental factors.85 PNG also has the largest fisheries zone in the Pacific, with its exclusive economic zone spanning 2.4 million square

PNG, with a population of 7.7 million, has the second largest population in Oceania (Figure 7). The country experienced over a decade of relatively robust economic growth (Figure 8), with expanding formal employment opportunities and strong growth in government expenditure and revenues. This growth was driven by increased demands and high international prices for the country’s exports (including agricultural products), conservative fiscal policies and, more recently, construction related to a major liquefied natural gas (LNG) pipeline project.79 A fall in global commodity prices greatly affected PNG’s economy and has affected its growth. The government has also cut back on expenditure on education, health and infrastructure by 30% in 2015 from the previous year.80
Fishery businesses range from small-scale inland river and coastal reef fisheries to large-scale deep water tuna fisheries. The country accounts for around 10% of global tuna catch.

Resource extraction is a major contributor to the economy (approx. 49% of the GDP). Its total natural resources rent accounts for 29.6% of the GDP, the 13th highest in the world. Oil and gas are major export items, accounting for around 35% of PNG’s total export earnings. Crude oil production is modest by global standards and declining due to maturing oil fields. Oil is slowly being replaced by natural gas production, with LNG production commencing in 2014. PNG has around 175.2 million barrels of oil, 155.3 billion cubic meters of natural gas, and 29 million ounces of gold in reserves. Construction of the US$19 billion PNG LNG project, a 700-kilometer long pipeline project connecting gas production and processing facilities across five provinces, contributed to recent economic growth. Since its completion in 2014, the project produces 6.9 million tons of LNG for export to China, Japan and Taiwan. The government and energy companies are planning on replicating the LNG project to other sites across PNG.

Mining is another major contributor to PNG’s economy, particularly gold, silver and copper. The six main mines – Ok Tedi, Porgera, Lihir, Ramu, Hidden Valley and Simberi – have an annual output of an estimated 2.072 million ounces of gold, 90,000 ounces of silver and 170,000 tons of copper. An estimated 20,000 people are employed in the mining sector. Small-scale mining is also present, with an estimated 60,000–80,000 small scale miners conducting alluvial mining. Production of both copper and gold from the country’s existing major mines has been declining since 2007 and 2010 respectively.

Tourism plays a small role in PNG’s economy – the country witnessed 182,000 international visitor arrivals in 2014, according to World Bank figures. In 2014, the direct and total contribution of travel and tourism to the PNG GDP was 0.7% and 2.1% respectively. Direct contribution amounted to about K269.5 (US$85 million), while total contribution was approximately K850.4 million (US$268.3 million).

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89 Mineral Resources Authority of Papua New Guinea.
million) in 2014. Tourism directly employs about 16,000 people (0.5% of total employment) while total employment including jobs indirectly supported by the industry amounted to 55,000 jobs (1.8% of total employment). The government has emphasized that it would like tourism to become a significant contributor to the economy.

Private sector
The private sector accounts for more than 90% of employment, 80% of overall consumption and fixed investment and 95% of gross domestic savings. This is due to the presence of capital-intensive extractive industries in the country’s economy. Micro and informal enterprises dominate the economy, mainly related to market-based agriculture. Up to 85% of the population relies on the large, mainly informal, agricultural sector.

Despite recent strong economic growth, conditions for private sector development have not improved. According to the World Bank, PNG ranks 145 out of 190 countries for ease of doing business in 2015. Chronic constraints such as poor infrastructure and utility services, a high crime rate, weak property rights, lack of competition and market access, and the inability of the finance sector to finance investment opportunities hamper the development of the private sector.

Malaria and healthcare sector
PNG has a high malaria burden. It has the highest burden in the WPR, accounting for 77% of all malaria cases in 2015, and the second highest in terms of case numbers in the Asia Pacific region after India. Ninety four percent of PNG’s population (7.16 million) lives in high malaria transmission areas, while the remaining 6% (457,000) lives in low malaria transmission areas. There were 553,103 reported confirmed cases of malaria and 163 reported deaths in 2015 (Table 3).

| Table 3. Malaria cases and deaths in Papua New Guinea, 2000–2015 |
|----------------------|-------|-------|-------|-------|
| Confirmed Cases     | 1,751,883 | 1,788,318 | 1,379,787 | 553,103 |
| Reported Deaths     | 617   | 725   | 616   | 163   |


Dengue is on the decline, with the GBD reporting nine deaths and 3,937 cases for 2015 (compared to 11 deaths and 11,326 cases in 2005).

The large contribution of the extractive industries distorts PNG’s socio-economic indicators. Despite a GDP per capita of about US$2,000, its development indicators are much lower than other countries in its income bracket. PNG has an HDI of 0.505, and ranks 158th out of 188 countries. Life expectancy at birth stands at 62.6 years, while infant and under-five mortality stand at 45 and 57 per 1,000 live births respectively. Very few mothers deliver at health facilities, and the maternal mortality ratio is estimated to be 215 per 100,000 live births.

In 2014, total expenditure on health amounted to about 4.26% of GDP, with government expenditure accounting for 81.28% of total health expenditure and 9.54% of the government budget. Out-of-pocket health expenditures were 10.5% of total health expenditure. Government spending on health was approximately US$75 per capita.

Healthcare sector challenges include a rapid population growth (the population increased by 40% between 2000 and 2011 at an average annual growth rate of 3.1%), limited access to services, a high maternal mortality ratio, dual burden of communicable and non-communicable diseases, shortages of human resources for health and essential medicines, insufficient funding for service delivery and weak management capacity. PNG has 0.058 physicians and 0.565 nurses per 1,000 people.

100 Ibid.
3.4. Comparison

Tables 4, 5, and 6 provide side-by-side comparisons for Bangladesh, Indonesia and PNG on various economic, health and social indicators.

**Table 4. Cross comparison of economic indicators**

<table>
<thead>
<tr>
<th>Economy</th>
<th>Bangladesh</th>
<th>Indonesia</th>
<th>PNG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>161 m</td>
<td>252.8 m</td>
<td>7.619 m</td>
</tr>
<tr>
<td>GDP (billions US$)</td>
<td>195</td>
<td>862</td>
<td>16.93</td>
</tr>
<tr>
<td>GDP (billions US$, purchasing power parity)</td>
<td>536</td>
<td>2,842</td>
<td>21.4</td>
</tr>
<tr>
<td>GDP per capita (US$)</td>
<td>1,211.70</td>
<td>3,346.50</td>
<td>2,268.17</td>
</tr>
<tr>
<td>GDP per capita (US$, purchasing power parity)</td>
<td>3,332.80</td>
<td>11,035</td>
<td>2,865.18</td>
</tr>
<tr>
<td>GDP growth rate (%, 2015)</td>
<td>6.6</td>
<td>4.8</td>
<td>2.2</td>
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</table>

**GDP contribution by sector (%)**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Bangladesh</th>
<th>Indonesia</th>
<th>PNG</th>
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</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>15.5</td>
<td>38.9</td>
<td>25.6</td>
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<tr>
<td>Industry</td>
<td>28.1</td>
<td>13.2</td>
<td>49.1</td>
</tr>
<tr>
<td>Services</td>
<td>56.4</td>
<td>47.9</td>
<td>25.4</td>
</tr>
</tbody>
</table>

**Labor force by occupation (%)**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Bangladesh</th>
<th>Indonesia</th>
<th>PNG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>47.0</td>
<td>13.8</td>
<td>85</td>
</tr>
<tr>
<td>Industry</td>
<td>13.0</td>
<td>41.4</td>
<td>7.5</td>
</tr>
<tr>
<td>Services</td>
<td>40.0</td>
<td>44.8</td>
<td>7.5</td>
</tr>
</tbody>
</table>

**Table 5. Cross comparison of health indicators**

<table>
<thead>
<tr>
<th>Health</th>
<th>Bangladesh</th>
<th>Indonesia</th>
<th>PNG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Malaria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People in high-transmission areas in millions (% of pop.)</td>
<td>4.28 (3)</td>
<td>30.3 (12)</td>
<td>7.16 (94)</td>
</tr>
<tr>
<td>People in low-transmission areas in millions (% of pop.)</td>
<td>12.4</td>
<td>36.9 (14)</td>
<td>0.457 (6)</td>
</tr>
<tr>
<td>Confirmed cases (2015)</td>
<td>6,608</td>
<td>217,025</td>
<td>553,103</td>
</tr>
<tr>
<td>Reported deaths (2015)</td>
<td>9</td>
<td>157</td>
<td>163</td>
</tr>
<tr>
<td><strong>Dengue</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases (2015)</td>
<td>2,764,726</td>
<td>27,900,000</td>
<td>3,937</td>
</tr>
<tr>
<td>Deaths (2015)</td>
<td>178</td>
<td>8,730</td>
<td>9</td>
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<td><strong>Health spending</strong></td>
<td></td>
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</tr>
<tr>
<td>Government spending on heath per capita (US$)</td>
<td>8.6</td>
<td>37.55</td>
<td>75</td>
</tr>
<tr>
<td>Out-of-pocket expenditure as % of total health expenditure</td>
<td>67</td>
<td>46.9</td>
<td>10.5</td>
</tr>
<tr>
<td>Total expenditure on health as % of GDP</td>
<td>2.81</td>
<td>2.85</td>
<td>4.26</td>
</tr>
<tr>
<td>Govt. expenditure as % of total health expenditure</td>
<td>27.9</td>
<td>37.78</td>
<td>81.28</td>
</tr>
<tr>
<td>Govt. health expenditure as % of govt. budget</td>
<td>5.65</td>
<td>5.73</td>
<td>9.54</td>
</tr>
<tr>
<td><strong>Main indicators</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Development Index score</td>
<td>0.57</td>
<td>0.684</td>
<td>0.505</td>
</tr>
<tr>
<td>Human Development Index rank</td>
<td>142</td>
<td>110</td>
<td>158</td>
</tr>
<tr>
<td>Life expectancy at birth (years)</td>
<td>71.6</td>
<td>68.88</td>
<td>62.6</td>
</tr>
<tr>
<td>Infant mortality (per 1,000 live births)</td>
<td>31</td>
<td>23</td>
<td>45</td>
</tr>
<tr>
<td>Under-five mortality (per 1,000 live births)</td>
<td>38</td>
<td>27</td>
<td>57</td>
</tr>
<tr>
<td>Maternal mortality ratio</td>
<td>176</td>
<td>126</td>
<td>215</td>
</tr>
<tr>
<td>Doctors per 1,000 people</td>
<td>0.356</td>
<td>0.204</td>
<td>0.058</td>
</tr>
<tr>
<td>Nurses and midwives per 1,000 people</td>
<td>0.218</td>
<td>1.4</td>
<td>0.565</td>
</tr>
<tr>
<td>Tourism</td>
<td>Bangladesh</td>
<td>Indonesia</td>
<td>PNG</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>International tourism arrivals (2015)</td>
<td>125,000</td>
<td>9,435,000</td>
<td>182,000</td>
</tr>
<tr>
<td>International tourism receipts (US$, 2014)</td>
<td>154 million</td>
<td>11.567 billion</td>
<td>2.8 million</td>
</tr>
<tr>
<td>Direct contribution (US$, 2014)</td>
<td>3.8 billion</td>
<td>25 billion</td>
<td>85 million</td>
</tr>
<tr>
<td>% of GDP</td>
<td>1.9</td>
<td>3.2</td>
<td>0.7</td>
</tr>
<tr>
<td>Total contribution (US$, 2014)</td>
<td>8 billion</td>
<td>72.5 billion</td>
<td>268.3 million</td>
</tr>
<tr>
<td>% GDP</td>
<td>4.1</td>
<td>9.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Direct employment</td>
<td>903,500</td>
<td>3,320,000</td>
<td>16,000</td>
</tr>
<tr>
<td>Total employment</td>
<td>1,984,000</td>
<td>9,800,000</td>
<td>55,000</td>
</tr>
</tbody>
</table>
4. Sector Background

4.1. Sector selection
Based on background research, three business sectors were identified which are promising for private sector investment in malaria. Sector selection was based on the following criteria:

**Inclusion criteria:**

1. Private sector activities and operations in remote, high malaria transmission areas
2. Malaria exposure risk of employees/target population
3. Private sector productivity is directly impacted by malaria incidence
4. Size of contribution to the national economy
5. Size of the labor force involved in the sector

**Exclusion criteria:**

1. Private sector operations where access is an issue
2. Political economy and sensitivity of certain industrial sectors

**Sector selection results:**

1. Agriculture/agro-business (plantations)
2. Oil and gas
3. Travel and tourism

These sectors and their sub-sectors (particularly in agriculture/agro-business) are common across Bangladesh, Indonesia and PNG. Based on the snowball approach, interviews covered a range of stakeholders from small to large plantations, small and large hotels including chain hotels in the tourism sector as well as relevant associations (e.g., hotel and tourism associations, airline and business associations). In PNG, two different interviews were conducted with one entity covering the extractive industry which included one mining company.

4.2. Sector background

**Plantation sector**

The agribusiness/plantation sector is a major employer of seasonal unskilled laborers, whose occupation and socio-economic status make them vulnerable to malaria. This sector has also been documented to employ mobile migrant populations (MMP) as both skilled and unskilled labor. MMPs are at higher risk of being infected with malaria, are at risk of receiving late and sub-standard treatment due to poor access to health services, and pose the risk of spreading malaria and drug resistance along their irregular migration routes.\textsuperscript{101} In places where plantations are created by deforestation or located near forests, plantation workers are at increased risk of vector-borne diseases such as malaria and dengue.\textsuperscript{102}

**Oil and gas sector**

The oil and gas sector is divided into the onshore and offshore components. Construction of onshore pipelines and facilities, often through dense jungles, leads to increased exposure and environmental changes (such as standing water pools) that can result in an increase in local mosquito populations. In addition, travelling employees, particularly from non-endemic areas, are particularly vulnerable due to lower natural immunity to the disease.\textsuperscript{103} Companies operating onshore projects, such as pipelines and refineries, have been involved in malaria-related health corporate social responsibility (CSR) programs (e.g., Oil Search Foundation in PNG). Onshore oil and gas projects tend to be situated in remote locations including in malaria-endemic areas. In addition, the presence of expatriates and the skilled labor-intensive nature of many oil and gas projects mean that companies running them are more inclined to look after the health status of workers in their operation sites. The nature of the oil and gas industry also necessitates that companies be proactive and socially responsible in addition to operate in an ethical and environmentally friendly manner. There is also greater expectation for oil and gas companies to assume public responsibilities.\textsuperscript{104} Both the agribusinesses/plantations and oil and gas sectors have been traditional partners in malaria and other health programs within the Asia Pacific region.


Travel and tourism sector
The travel and tourism industry is an important sector given that international air traffic and passengers to the region are increasing rapidly and thereby increasing the risk of imported malaria cases. According to the International Civil Aviation Organization, the Asia Pacific region will command the highest growth rate at 30%, surpassing North America and Europe at 27%. Similarly, international visitor arrivals to the region will grow by more than 100 million visitors in five years’ time, from 537 million in 2015 to 657 million in 2020.

105 International Civil Aviation Organization, December 2012.
5. Findings

5.1. Malaria, dengue and other vector-borne diseases

Malaria used to be a big problem but is no longer a priority health concern.
– Mining respondent, PNG

Approximately 80% of companies interviewed in Bangladesh across all three sectors reported that malaria is a current health issue. The respondents from Indonesia do not perceive malaria as a health challenge; while in PNG, malaria was a significant health issue in the past but no longer is it of current concern due to decline in cases. However, the three companies in PNG – each operating through their respective foundations – have the most comprehensive malaria control programs, including case tracking. There was no mention of drug resistance.

Respondents in Indonesia specifically identified dengue as a major health concern. This reflects the recent hike in dengue cases within the country (27.9 million dengue cases and 8,730 deaths compared to 217,025 confirmed malaria cases and 157 reported deaths for malaria for 2015) and across the region. Interviewees from the Indonesian tourism sector also see Zika as a major problem, as it could undermine tourism arrivals especially for Bali.

The travel and tourism sector is a relatively new sector for involvement in health programs. However, it is also more sensitive to health issues than the agribusiness/plantation and the oil and gas sectors, given that the health status of a country or region directly affects the core business, and the industry is more conscious of its reputation. In spite of being the least aware of malaria and other vector-borne diseases, this sector is also the most willing to cooperate. In addition, engagement of this sector by public health efforts has also been low compared to other industries.

5.2. Labor force

In Bangladesh, most of the workers are illiterate or have a low level of education, so it’s difficult to make them understand about the disease.
– Plantation respondent, Bangladesh

Plantations have both skilled and unskilled workers as part of their labor force. The unskilled workers tend to be seasonal daily laborers who are less likely to live on site than the full-time skilled workers. They are more likely to lack health insurance coverage and are also not tracked by the companies. Skilled workers are usually full-time, live on-site and have insurance that covers work-related accidents and injuries rather than general health. In Bangladesh, unskilled workers tend to be illiterate and are seen as lacking awareness on general health issues. In PNG, one company operates remote projects and arranges for its workforce to fly into the site on a rotational basis.

Contractors and daily laborers are not covered by health insurance, with companies trying to save money.
– Plantation respondent, Indonesia

5.3. Corporate social responsibility and malaria interventions

The private sector enterprises interviewed in the three countries had varying activities with regard to CSR and malaria elimination. Companies normally provide services to the surrounding communities (such as access to electricity and clean water, education, health and mobile connectivity) as part of their CSR or normal operational activities with divergent intervention activities. Insecticide spraying and awareness programs are the most common interventions targeting not only malaria but also other health issues and vector-borne diseases, while larger companies had their own clinics and on-site medical staff.

106 Out of nine companies interviewed, two companies (one airline and one plantation) did not perceive malaria to be a health problem.
Some of the oil and gas companies in PNG undertake “fitness for work” medical assessments on all employees, which includes alcohol and drug testing, fatigue management and management of high-risk cases. Occupational health and safety programs are also offered. Some companies have clinics, which provide basic health and wellness checks (i.e., blood pressure, weight, etc.) and also environmental awareness talks as part of its “healthy islands” approach. Some companies have doctors, nurses and surgeons on-site with ambulance service and obstetrics care. Those operating in PNG are the most proactive when it comes to malaria interventions; for example, they conduct active case management, perform fogging, distribute long-lasting insecticidal nets (LLINs), conduct indoor residual spraying (IRS), operate clinics and hold awareness/occupational health programs for both employees and surrounding communities.

In Indonesia, only one plantation company had BCC/IEC for its employees, while two hotels distributed repellents, used mosquito coils, and conducted outdoor spraying. The company also had on-site clinics and paramedics, while doctors from the district health authority made routine visits. Its employees are also enrolled in the mandatory government health insurance scheme, which also covers families. A plantation respondent also mentioned that many people think there is no malaria in the western part of Indonesia, and that some gold mining companies distribute mosquito nets to everyone, including visitors. In Bangladesh, all three plantations had awareness programs, while two had medical centers and encouraged its employees to use bed nets and repellents.

Larger companies have more financial resources to conduct health and other CSR programs for their employees and the surrounding communities, such as the three companies operating in PNG along with their respective foundations. Smaller enterprises do not have the resources to cover its workforce, let alone the surrounding communities. The health insurance scheme of each country also affected the ability of companies to provide coverage for their employees.

### 5.4. Return on investment

The main measure of ROI is achieved through the relative rating of health delivering performance in the province compared to other regions.

– Mining respondent, PNG

We do measure the impact of our business health program both in qualitative and quantitative terms. The quantitative measure is based on how many people are not working due to sickness and also the cost of medicine and health support provided as we offer this free. The qualitative measures look at the resources and facilities dedicated for providing the medical care for our employees and their families.

– Plantation respondent, Bangladesh

The companies interviewed do not measure a return on investment (ROI) in health in financial terms. Generally, the companies will set indicator targets at the beginning of each year for a range of community and work force directed interventions as based on their program priorities, reporting progress against those indicators periodically to their board. Indicator targets may include vaccination rates for children under five years of age in their target communities, number of LLINs distributed or houses sprayed with insecticide. Another company primarily measures ROI by measuring against the agreed performance framework, which can include achieving targets for immunization and other health outcome targets. Some companies use lost time accident rate (accidents per 200,000 working hours) as a metric that is reported on an annual basis.

Quantifying ROI for malaria in pure economic terms may not be convincing for the business owners and operators. However, value proposition can be made in terms of enhancing their social license to operate.
5.5. Perceptions on private sector involvement

The private sector is too busy to anticipate outbreaks. They need to work with local government to endorse them.

– Hotelier respondent, Indonesia

The majority of the respondents wanted the public sector to lead malaria elimination efforts. In Bangladesh, companies are mostly eager to collaborate but see malaria as an issue that has to be mainly tackled by the public sector, specifically through partnership or regulatory approaches. They are not receptive towards the private sector being involved in raising funds for malaria elimination. Whilst in Indonesia, more companies are open to participation in malaria interventions. One respondent stated that clear guidelines and instructions from the public sector on the activities that businesses can do (e.g., having malaria volunteers on-site, vector control measures to implement) would facilitate private sector involvement. Another commented that companies are unwilling to conduct activities that will overlap with services offered by the government. Companies in PNG are already actively involved in malaria elimination, although they no longer perceive malaria as a major health concern. All three companies have established respective foundations and have delineated the functions: the company continues to focus on its core business expertise to earn revenue, while the foundation focuses on the CSR component.

5.6. Motivators, enablers and incentives

Employee welfare, safety and productivity are the main motivators for all companies to invest in malaria and other health programs. Hotels also reported guest welfare and safety as another major driver. In PNG, one company cited the social license to operate as a motivator, while another had health as one of its corporate strategic sectors. It is crucial to note that most companies reported these motivators while concurrently stating that malaria was no longer the main health concern for them.

Implementing partners are crucial enablers for the businesses. In PNG, the three companies formed their respective foundations in order for the company to remain focused on its core businesses and revenue. The companies also collaborated with Rotarians Against Malaria to deliver LLINs. In contrast, companies in Bangladesh were motivated to become involved but reported a need for implementing partners to raise awareness and coordinate the issues.

The main driver for the Foundation covering plantation and mining activities is to maintain community relations, and to “right the wrongs” of the previous operators as a means of maintaining our social license to operate.

– Plantation and mine operator, PNG

Another key enabler is having a company board that is committed to malaria elimination. This is achieved through both the composition of the board and having board members who are aware of the importance of malaria elimination. Such a board allows the company to maintain a strong commitment, especially within the context of declining case numbers and uncertainties due to declining commodity prices and politics. One of the respondents from PNG stated that the company foundation’s board has a very clear mandate of “what’s good for PNG is good for the company.” There are specialists on the board who focus on stakeholder relations such as a development specialist and a community representative.

As with many other companies, the main drivers of Bangladesh plantation businesses are to sustain productivity, which they cite as not possible without people’s health, safety, and security. Protecting employees from diseases and providing medical care and support when they fall sick are important to increase productivity. However, access to medical services was an issue for the plantation owners.

Tax relief or tax credit schemes will enable and also incentivize companies to commit more resources for malaria programs. Designating the foundation as an aid provider can exempt employees from paying income tax, which in turn can be diverted to expand signature programs of corporations or foundations. Some companies also suggested low-interest loans.

In terms of incentives, there are two categories – non-monetary and monetary. Monetary incentives would include the abovementioned tax schemes, alongside matching commitments (e.g., Bill & Melinda Gates Foundation) or co-financing arrangements (e.g., Global Fund to Fight AIDS, Tuberculosis and Malaria [Global Fund]) with public and private sector entities. Non-monetary incentives would include recognition awards (e.g., Green Hotelier Awards) or certifications (e.g., Green Globe certification) from regional or global level entities.
The tourism sector in Indonesia is very receptive towards international organization recognition and certification. Visibility is crucial for tourism companies and an award or certification for being free from malaria would be good for business.

5.7. Summary of findings

Table 7. Summary of findings

| Malaria, dengue, and other vector-borne diseases | • Malaria is current health issue only in Bangladesh  
• Malaria is not a challenge in Indonesia and PNG  
• PNG companies have most comprehensive control programs  
• Dengue is a major health concern in Indonesia  
• Travel and tourism sector are most sensitive to health issues |
| Labor force | • Plantations have both skilled and unskilled workers  
• Unskilled workers: seasonal/daily, less likely to live on-site and have health insurance  
• Skilled workers: full-time, live on-site and have insurance  
• Bangladeshi unskilled workers tend to be illiterate and perceived to lack health awareness  
• PNG company rotates workforce in remote projects |
| Return on investment | • Interviewed companies do not measure an ROI in health in financial terms  
• Companies set indicator targets at beginning of each year for interventions and report progress against indicators  
• ROI is measured against agreed performance framework  
• Some use lost-time accident rate  
• Quantifying ROI for malaria in pure economic terms may not be convincing  
• Value proposition are linked to enhancing social license to operate |
| CSR and malaria interventions | • Private sector enterprises have varying CSR and malaria intervention activities. Companies normally provide services as part of CSR or normal operational activities  
• Insecticide spraying and awareness programs are most common interventions  
• Larger companies have own clinics and on-site medical staff  
• Companies in PNG are most proactive in intervention  
• Larger companies have more financial resources to conduct programs for employees and communities  
• Country’s health insurance scheme affects companies’ ability to provide coverage to employees |
| Perceptions on private sector involvement | • Most want public sector to lead malaria elimination  
• Companies in Bangladesh are eager to collaborate but see malaria as public sector issue, are not receptive towards private sector involvement in fundraising  
• Companies in Indonesia are also open to participation  
• Private sector wants clear guidelines and instructions from the public sector  
• Companies are unwilling to conduct activities that overlap with government services  
• Companies in PNG are already actively involved in malaria, with most CSR functions delineated to foundations |
| Motivators | • Employee welfare, safety and productivity are main concerns  
• Guest welfare and safety are major drivers for hotels  
• The social license to operate is key |
| Enablers | • Setting health as a corporate strategic sector  
• Implementing partners are crucial enablers  
• Committed company board (board composition or board members aware of importance of malaria elimination)  
• Tax relief or tax credit  
• Designating foundation as an aid provider |
| Incentives | • Non-monetary incentives  
• Recognition awards  
• Certifications from regional or global level entities  
• Monetary incentives  
• Tax schemes  
• Matching commitments  
• Co-financing arrangements |
6. Analysis

This section analyzes information garnered from interviews with private sector stakeholders (Table 7) to construct a better understanding of the factors influencing private sector involvement and investment in malaria control and elimination.

6.1. Sectoral analysis

It is important to note that the momentum for private sector investment in malaria is declining, in part due to declining prices for oil, gas and other commodities such as rubber and palm oil. The decline is significant as the price points for these commodities revert back to the price points during the global financial crisis in 2009 (Figures 10a–c).

Figure 10a, b and c. Commodity prices from 2006–2016

a. Palm oil, US$ per metric ton

![Palm oil price graph]

b. Rubber RSS3, US$ per kilogram

![Rubber price graph]

c. Brent crude, US$ per barrel

![Brent crude price graph]

Plantation sector

The commonality between the plantation and oil and gas sectors is that the majority of plantations – such as those producing rubber and palm oil – are affected by the decline in world commodity prices. This has been a similar story with the oil and gas sector, whose operations and investments have been greatly affected by the price of their produce. This sensitivity to commodity prices poses challenges for companies to commit and getting involved in malaria elimination activities, especially small and medium enterprises (SMEs). For example, a plantation company in PNG has a modest budget for health (e.g., less than US$300,000 per year for five plantations covering 16,000 people) which includes operating costs such as salaries, maintenance, outreach, supplies and commodities. The decline in palm oil prices is presenting funding challenges for the refurbishment of the clinics.

That said, plantation employees have a different profile from those working in the extractives industry. While workers in the extractive industries live on-site throughout the year, palm oil plantation employees are primarily seasonal workers who return to their villages or provinces after the season’s work has ended. Similarly, in Indonesian plantations, permanent workers stay on certain land parcels while the daily workers come from nearby villages. Tea plantation workers in Bangladesh also do not stay on-site but come from nearby villages, as the businesses do not have accommodation for workers to stay at the farm or plantation site. Approximately 80-90% of the Bangladeshi plantation workforce is female.

The fluidity of the plantation workers’ accommodation arrangements and the seasonal nature of their work mean that they are subject to passive surveillance rather than the active surveillance applied to the employees and families that live on-site. This presents a major gap for surveillance, treatment and follow-up, and also poses the risk of imported/exported malaria cases.

Tourism sector

Unlike in other sectors, malaria, dengue and Zika directly affect core business for the tourism sector. Therefore, the tourism sector is highly sensitive and realizes that even the perception of rumors is likely to affect core business (e.g., Zika and the tourism sector in Bali). This linkage presents both opportunities and challenges for engagement. Based on the interviews, there is considerable interest among businesses in the travel and tourism sector to become engaged in malaria elimination activities. However, the sensitivity of the sector poses the challenge of hotels that are concerned with overtly raising awareness on malaria.

It is important to explore engagement of new partners to build momentum, particularly within the tourism sector, as it is also linked with air traffic growth and international tourism arrivals.

Oil and gas sector

Corporations and foundations have a different mandate and delivery mechanism – also known as the “inside the fence” and “outside the fence” model. The main focus of corporations is on health and productivity of the workforce (inside the fence). The foundations have a broader mandate along the corridors (outside the fence) of their operations. Both entities are interrelated but with slightly different objectives. Therefore, there is a need to reach out to not only the oil and gas companies and corporations but also to the foundations dealing with social licenses.

Some foundations have embraced broader development goals, with health remaining as a key stream but with the inclusion of other sectors such as leadership, education and women’s protection and empowerment. It is possible that the broader mandate could lead to a reduction in investments for malaria at the foundation level rather than at the corporate level. The foundations perceive their investments from a different perspective, often guided by community groups which are making the call for further community development needs (e.g., aid posts). The foundations see the need for on-going investments which are longer-term and strategic in nature (e.g., infrastructure), and therefore substantial trust fund is paid out to landowners and communities in areas of their operations.

6.2. Reprioritizations

The private sector is reprioritizing its resources used for malaria-related CSR activities. Oil and gas – the traditional private sector partners for health activities – along with other extractive industries, have been losing interest in malaria due to a number of reasons.

First, the decline in global commodity prices has meant that companies have less revenue to devote to CSR activities. Therefore, they are more likely to concentrate their CSR efforts into areas directly related to their core businesses, such as energy security for the oil and gas sector.

Second, the decline in malaria burden in project sites, private sector-sponsored clinics and surrounding communities has rendered the disease invisible on both the project operation level and corporate leadership’s level, and is prompting companies to recalibrate their CSR budgets and subsequent activities.

Third, the number of dengue cases has risen dramatically in recent years in both rural and urban areas across the Asia Pacific region, “climbing the social ladder” to affect middle-class urbanites.107 This, alongside the decline in malaria cases and the lack of specific medicines for dengue, causes policy elites, business owners, urbanites and laborers to now perceive dengue as a greater health security threat. While certain dengue interventions overlap with malaria (especially the vector control aspects, such

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as improving the quality of housing by applying mosquito screens, IRS, fogging, applying larvicides, providing personal protection, source reduction and environmental management\textsuperscript{108}, they have caused both local health officials and business owners to prioritize dengue over other communicable diseases. The focus on dengue can be leveraged to support broader vector-borne disease efforts and other integrated approaches through health systems strengthening for elimination.

### 6.3. Core business and board composition

The private sector has a preference for CSR activities that relate to their core business and competencies. This helps the companies concentrate their CSR efforts in the context of limited management time and resources, while also ensuring broader corporate leadership buy-in. This tends to place malaria control and elimination at a disadvantage compared to CSR options such as energy security, food security and livelihoods.

A company’s decision on the scope of its CSR and whether it perceives malaria as a worthwhile issue for the company to become involved in, depends on the composition of its board, or, in cases where such companies have established philanthropic foundations, the board of such foundations. The awareness of board members is critical for private sector buy-in, particularly in settings witnessing declining malaria cases and where other health issues are seen as having a greater impact on productivity, the health security of employees and the surrounding communities.

One of the respondents from PNG stated that the company foundation’s board has a very clear mandate of “what’s good for PNG is good for the company.” There are specialists on the board who focus on stakeholder relations, such as a development specialist and a community representative. Such appointees approach investment from different perspectives but with a common goal in mind. Furthermore, when a local consultant commissioned by the foundation to conduct a strategic review proposed redirecting funds set aside for malaria to other areas due to declining cases, the board rejected the recommendation due to its limited understanding of malaria resurgence and its potential impact on productivity.

### 6.4. Implementing partners

Implementing partners have been a key component of private sector involvement in malaria. In PNG, the three companies interviewed all reported collaborating with a malaria-specific initiative (e.g., Rotarians Against Malaria). The presence of a proactive malaria-specific entity, whether public or private, helps bridge the technical and policy gaps for companies (e.g., they might not need to hire malaria specialists, will not need to craft a malaria strategy from scratch and be more connected with the local, regional and global malaria platforms), and also helps them to monitor and evaluate interventions. Thus, implementing partners help facilitate private sector involvement by leveraging their respective resources and expertise.

Current controls are focused on personal security and not necessarily on health security, which is a new concept for us.

- Bangladesh airline respondent

In Bangladesh, the interviewed companies all seemed to lack connections to such implementing partners. While the companies are eager to participate, the paucity of connections is repeatedly raised as a barrier to the companies’ involvement in malaria elimination efforts. In both Indonesia and Bangladesh, airline industry respondents suggested that Civil Aviation Authority Boards could be used for addressing and implementing malaria and other vector-borne disease threats (e.g., publication of monthly journals for operators and users).

Similarly, the use of other boards, forums and associations were mentioned, including the regional and country level tourism boards and associations, plantation associations (e.g., Tea Associations), hotel owners associations, airline associations and other private sector forum/associations.

### 6.5. Global commodity prices

Companies’ resources and interest to be involved in health and other CSR programs directly depend on their revenue stream, which is dictated by global commodity prices. Since a 10-year peak in 2011, most commodity prices have fallen sharply to levels similar to 10 years ago (Figures 7–9). The US Energy Information Administration expects Brent crude oil prices to average about US$51 per barrel, while the World Bank predicts oil prices to be at about US$53 per barrel. The World Bank also projects that energy prices – including oil, natural gas and oil – will jump by 25% in 2017. This will still be lower than oil prices in January 2006 (US$64 per barrel).

The global financial crisis and slowing economic growth in China has led to a worldwide decline in commodity prices that have greatly affected both states (mainly resource producers such as PNG) and companies. Companies facing lower profit margins, economic losses and stagnant growth prospects in addition to global, political and security uncertainties are less willing to allot their funds, causing already involved companies to reprioritize their commitments.

6.6. Challenges to malaria elimination efforts

Access issues: Based on prior projects and the interview process for this report, access to key private sector stakeholders is an extremely difficult if not daunting task without referrals, networks or personal connections. Trust is an important factor in determining access. Such connections helped canvass meetings with stakeholders for this report. The probability of a response or a meeting is higher when made through private sector contacts. Accessing key private sector stakeholders can pose as a barrier to initiating or expanding PPPs.

We will still follow national guidelines but the reality is that we will be placing priorities elsewhere and try to maintain reasonable profit margins – investing a lot in like green certification, etc.

– Palm oil respondent, PNG

Arguments: Malaria investment arguments tend to be made based on “economic arguments” that focus on productivity. However, as malaria cases decline, economic arguments (e.g., cost-benefit analysis on worker productivity and lives saved) may no longer be convincing for the majority of the corporate and private sector stakeholders within the context of low endenmicity coupled with little or no malaria cases detected at workplace sites. Many oil companies are witnessing a decline in malaria cases in recent years in and around the worksites; for example, medical officers in clinics report only 2–3 cases per week. As malaria is becoming invisible to the eyes of the corporate world, it is increasingly difficult for companies to continue spending money on malaria prevention activities. Many private sector respondents – particularly in PNG and Indonesia but also a few in Bangladesh – perceive malaria as no longer being a public health issue. In response to the changing socio-economic and health landscapes, the corporate sector is moving away not only from malaria but also other vector-borne diseases and health, into other social sectors such as children’s education, women’s empowerment, livelihoods and income generation.

In this low endemicity context, “investment case arguments” focusing on prevention of reintroduction of malaria may be a more convincing argument (Table 8). For example, the estimated cost for preventing reintroduction in Sri Lanka is US$0.37 per person to maintain current interventions, while the cost of resurgence similar to the one experienced in 1997–2002 is estimated to be US$169 million per year.109 Companies are also witnessing imported cases of malaria through staff returning to camp following home furloughs.

However, it can be argued that for the majority of businesses, resurgence may not be part of their immediate decision making process and similarly, drug resistance issues are seen as not an immediate problem but rather an issue for the distant future. Therefore, advocacy and targeted messaging is required to persuade businesses to stay involved in malaria elimination activities.

Table 8. Economic arguments and metrics for low- and high-endemic settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Economic argument</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-endemic</td>
<td>• Investment case, focusing on prevention of reintroduction</td>
<td>• Lag and forward indicators (see Section 6.7)</td>
</tr>
<tr>
<td>High-endemic</td>
<td>• Manpower and productivity loss</td>
<td>• Reductions in cases and mortality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use of medical facilities and rapid diagnostic tests</td>
</tr>
</tbody>
</table>

Other Challenges: Other challenges identified by the private sector include:

- Lack of health commodities – unavailability of LLINs or rapid diagnostic tests (RDTs) hamper both public and private sector ability for malaria control
- Working in geographically challenging environments – logistical difficulties to bring in medical supplies and trained medical/technical people for control or elimination efforts, retention of such people and ability to provide referrals for complicated malaria cases
- Limitations with data – difficulty to properly measure needed metrics or the need for a better picture of the regional or national malaria landscape
- Lack of partner’s ability to think outside the box – inability to adapt to changing situations.

6.7. Building the investment case: ways to measure worker productivity

In transitioning from high to low endemicity or in places with low endemicity, there is a need to examine alternative approaches or mechanisms for engagement with corporate sector entities for the malaria elimination agenda, including the need to consider the use of other indicators.

Metrics on impact of malaria: A respondent in the oil and gas sector with an engineering background in PNG provided metrics on the impact of malaria on the

company. The lost time through injury frequency rate is 0.5/1,000,000 man hours worked, and the lost time through malaria frequency rate is 50/1,000,000 man hours worked (equivalent to two person years of lost work per year). This is one example where the company is using this metric effectively to bring malaria to the attention of management. A lost time through injury rate of 0.5/1,000,000 is considered “room for improvement” in the company’s operational yardstick, hence using a similar metric for malaria can be seen as an effective measurement tool.

**Lag and forward indicators:** Other companies do not measure ROI on their health program investments from a financial perspective, but do use a number of lag and forward indicators to measure their return (Table 9).

### Table 9. Lag and forward indicators measuring ROI

<table>
<thead>
<tr>
<th>Activity (example)</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency rates (injury, malaria, etc.)</td>
<td>Lag Indicator</td>
</tr>
<tr>
<td>Compliance to plan</td>
<td>Forward Indicator</td>
</tr>
<tr>
<td>Number of houses sprayed with IRS</td>
<td>Forward Indicator</td>
</tr>
<tr>
<td>Percentage of employees with current medical assessment</td>
<td>Forward Indicator</td>
</tr>
</tbody>
</table>

**Performance framework and targets:** Some companies primarily measure ROI against the agreed performance framework, which can include achieving targets for immunization and other health outcome targets.

**Health impact assessments:** The PNG mining company with its well-defined impact footprint conducts health impact assessments on communities. Similarly, palm oil companies in PNG undertake a full range of assessments, including environmental, fauna and health impact assessments (HIAs), while conducting baseline studies prior to expanding their operations. However, some of the expansion activities were put on hold when commodity prices fell.

### 6.8. Implications for financing and resource mobilization efforts

The economic downturn and low malaria endemic setting will make it difficult to engage companies for the resource mobilization and additional financing that is required for malaria elimination efforts.

Resource mobilization may be directed at three levels:

1. Targeting specific sectors for increasing regional financing and resource mobilization efforts;
2. Maintaining existing partnerships and expanding partnerships around malaria elimination, vector-borne diseases and regional health security; and
3. Forging PPPs.

### 1. Targeting specific sectors for increasing regional financing and resource mobilization efforts

Sector-specific foundations generally have more funding and resources than corporations since their funding is derived from parent companies and, in some cases, from other sources (e.g., a Global Fund principal recipient). Below are suggestions provided by respondents from the tourism sector as viable options for resource mobilization efforts.

The tourism industry conducts a large number of transactions with its customer base, and this niche of the industry can be utilized to collect donations or mandatory contributions. Charitable or voluntary contributions such as an optional US$1 contribution from hotel guests at check-out time will likely be a viable approach, although respondents from the tourism sector warned that clientele are sensitive to how the donated funds will be utilized. Often, clients and passengers alike trust that it will be used properly if donated to respected international organizations.

Airlines, on the other hand, do not want to increase ticket prices as they already operate on low margins. If levies are imposed, they could potentially operate on a sliding scale basis for different passenger classes. While the aviation industry and number of travelers are rapidly expanding across the Asia Pacific region, this also brings about increased competition as operators (both traditional and budget carriers) expand or new companies enter the market. Such competition is already prompting companies to slash airfares and attempt to operate on lower margins in order to attract customers.

As customers switch towards online bookings and transactions for hotels, tours and airlines, there are opportunities to raise funds through voluntary contributions.

### 2. Maintaining existing partnerships and expanding partnerships around malaria elimination, vector-borne diseases and regional health security

Discussions can be held with regional airlines or tourism associations to explore the possibility of leveraging airline tax levies for the region. Regional platforms such as the ASEAN Tourism Association (ASEANTA) may be used to work with the International Air Transport Association in order to explore possibilities similar to the UNITAID initiative for the Asia Pacific region.

In Bangladesh, there is potential to build a new private sector platform for malaria elimination as well as opportunities to explore avenues for resource mobilization. Respondents expressed willingness for their businesses to collaborate with such a platform that will provide the enterprises with information, recommendations on best practices and linkages with policy makers, the public sector and healthcare/commodities providers. Multilateral development banks (MDB) may be leveraged to support such platforms.
3. Forging public-private partnerships
Corporate leaders and SMEs are not inclined to invest due to the decline in both global commodity prices and malaria cases. SMEs may also view that their individual contributions would not amount to much significance. Pooling resources (both financing and in-kind contributions) from SMEs can encourage greater buy-in from companies that have traditionally lacked the resources to conduct health programs for their employees and families and achieve economies of scale. Partnerships linking businesses with implementing organizations (local health authorities, health NGOs, etc.) will also ensure better utilization of limited resources.

6.9. Implications for advocacy and targeted messaging
The following are suggestions from respondents: advocacy should be on a number of levels – directed to the companies, to industry associations and to the government and regulatory bodies.

Outreach and advocacy to the private sector for resource mobilization will depend on the type of messaging on malaria with a focus on reintroduction, drug resistance and their costs to society. Awareness is low in the tourism sector due to a disconnect from health issues and among unskilled plantation employees due to low socio-economic status and illiteracy rates. The private sector needs awareness not only of malaria but also of the examples in which businesses are already involved, public-private and private-private partnership models, local and regional implementing partners and the ways in which the companies can become involved. A specific checklist of action items will also help in gaining traction.

Given the context of declining malaria case numbers across the region, malaria advocacy will need to be tied to a wider narrative that includes other vector-borne diseases such as dengue, which has seen a dramatic resurgence in recent years, and Zika as part of regional health security.

In Indonesia, the government’s efforts to open up new locations as emerging tourism destinations offers an opportunity to raise the profile of malaria, as half of the newly designated sites are in malaria endemic areas.

Airlines can utilize their in-flight entertainment systems to show short advocacy films or notices to passengers, and also to raise funds (e.g., Cathay Pacific’s “Change for Good” campaign and Virgin America’s “Make a Difference” section). Airlines can also provide pamphlets or free mobile applications that adequately informs passengers and staff on how to avoid malaria and protect themselves.

Social media has changed the advocacy landscape, with platforms such as Facebook, Twitter, the Global Citizens movement and Change.org being used for awareness and advocacy. Social media has helped key issues gain traction among internet users. Celebrities serving as issue ambassadors, hashtags and creative marketing can help propel malaria onto national, regional and international audiences and can also raise funds. For instance, the “Ice Bucket Challenge” for amyotrophic lateral sclerosis or Lou Gehrig’s disease raised an additional US$115 million.

Advocacy to tourism boards can help encourage the tourism sector to be more involved. Annual tourism meetings do not include health on their agenda, despite the industry being sensitive to health security issues, as seen during the SARS epidemic in 2003. In addition, advocacy with the Ministry of Tourism and local government can affect policy change and regulatory practices that can be utilized for resource mobilization.

Awareness campaigns will keep malaria on the radar of companies. Industry champions can play a key role due to their status as insiders who have an in-depth understanding of the dynamics and challenges of the private sector. They will be crucial to bridge the gap between the industries and the malaria community.
7. Recommendations

This section contains a list of recommendations for primary stakeholders involved in the Asia Pacific region’s efforts to eliminate malaria. Section 7.1 contains recommendations for the public sector. Section 7.2 provides recommendations for development banks and partners. Section 7.3 is a set of recommendations for regional bodies.

7.1. The public sector

Government policies have significant impact on the activities of the private sector. The government can implement:

1. **Tax relief and tax credit schemes**: Tax relief or tax credit schemes will enable and incentivize companies to commit more resources for malaria programs. Designating the foundation as an aid provider can exempt employees from paying income tax, which in turn can be diverted to expand signature programs of corporations or foundations. Some companies are already benefiting from tax credit schemes such as the mining sector in PNG.

2. **Non-monetary incentives**:
   a. **Awards** could be given by relevant ministries (e.g., tourism, health) in recognition of companies that meet guidelines or contribute to malaria elimination efforts. Such awards could be tiered and based on a points system. Government agencies or ministries can confer awards such as a “Sponsors to Regional Malaria Elimination” award, similar to the more recognized Green Hotelier Award in the tourism sector that recognizes environmentally friendly operations.
   b. **Certifications** can be similar to awards, acknowledging companies’ adherence to checklists such as undertaking activities to minimize malaria and other communicable diseases threats in order to improve the health of workers and surrounding communities.
   c. The government can recognize the private sector’s contribution through special mentions and acknowledgements at public events, galas and in publications. It can also promote best practices of select companies.

3. **Social licensing requirements**: For companies and foundations engaged in health programs, there is no guarantee that the companies will be present beyond their term, which depends largely on the status of the social license. In order to maintain the interest of the private sector entities, social licensing issues can be extended for the companies involved in malaria and other broader health activities.

4. **Regulatory framework**: Large-scale companies will pay attention to regulations. Examples include rules that require businesses to conduct HIAs and to set aside a certain amount for CSR activities. Government-provided checklists allow companies to identify the specific areas and ways to contribute.

5. **Public-private partnerships**: PPPs can be initiated with the public sector, including both local and international NGOs, to provide training and commodities to the private sector and gradually encourage private sector investments as part of their operational or core budget activities in order to achieve sustainability of programs.

The concept of a single private sector company conducting CSR for their own community by joining forces with provincial government towards an alliance approach for malaria control and elimination (e.g., the New Ireland Provincial Malaria Alliance – a new initiative against malaria in PNG) could serve as a potential model for replication in other areas or other countries.

When approaching the private sector for such partnerships, it will be crucial to incorporate the following three factors:

a. **Need for value proposition**: There is a need to approach the private sector with a specific proposition for a potential collaboration. Having clear guidelines and a checklist of what and how the private sector can contribute will enable the companies to be more involved, as they are informed of what needs to be done and in which sequence. This will allow for easier compliance, monitoring, and evaluation.

b. **Need to encourage in-kind initiatives**: Teaming up with companies for enhanced logistical support or supply chain management support such as helicopters to transport commodities in remote areas or other resources in line with their core strengths. This can further expand the CSR activities and involvement of companies that can lead to sustainability of programs.

c. **Need for targeted messaging**: The focus can be on continuing investments in malaria as the region transitions from low endemicity to elimination; linking malaria with other vector-borne diseases and health security; and emphasizing the importance of malaria elimination in the context of drug resistance.
6. **Promoting community involvement**: Communities can play a critical role in shaping both government and corporate perspectives on various matters. Grassroots communities and local governments should request keeping malaria elimination as a priority when they are consulted by corporations or foundations at the beginning of each work planning cycle, especially for engagement in the mining and plantation sectors. Similarly, engaged local communities should be used to secure and maintain commitment to malaria elimination from politicians and local or national government, especially in the form of regulations, standard operation procedures and budget allocations.

7. **Lessons from the private sector**: Lessons can be learnt from the private sector on how they engage in surveillance and monitoring mechanisms that are already in place to prevent imported cases (e.g., staff “fly in” and “fly out” practiced by one of the PNG companies). Other fields include logistics and supply chain management support. Such lessons will enable the government and malaria-specific platforms to maximize the use of limited resources and ensure that PPPs can better emulate private sector best practices.

8. **Mapping businesses and malaria hotspots**: Mapping businesses and malaria hotspots will help identify the communities and businesses that are most at risk of malaria and help support advocacy and resource mobilization efforts by visually highlighting the threat of malaria directly to businesses. In addition, mapping will enable both effective monitoring and a more efficient allocation of corporate and public sector resources. Identifying hot spots will also help local and regional governments to enforce regulatory requirements, such as companies conducting HIAs prior to commencing operations.

7.2. **Multilateral development banks and partners**

1. **Outreach to corporate leadership**: Awareness of board members is critical for private sector buy-in, particularly in low-endemic settings where malaria cases are declining and other issues are seen as of greater concern to the company, its CSR efforts or the company’s public image. It will also ensure that companies maintain strong commitment in the face of uncertainties due to declining commodity prices and the political situation.

   Effective mechanisms to reach corporate leaders need to be identified. In addition, advocacy to corporate boards on the challenges posed by malaria is crucial. Boards should be encouraged to include members with expertise in health or community development in order to better address the needs of communities in the companies’ areas of operations. One approach will be to highlight certain examples within the private sector whose boards have committed to malaria elimination, and utilize board members from those companies as corporate champions.

2. **Involvement in strategic reviews**: Foundations which are already involved in malaria efforts generally conduct periodic independent review on their strategies and will seek regular technical advice on changes to interventions and vector control mechanisms. Development banks and partners should plug into the strategic review process to maintain momentum on the malaria elimination agenda and canvass perspectives and requirements for better PPPs.

3. **Standard operating procedures**: Influencing standard operational procedures for businesses have been suggested by the respondents from all three sectors. Specific checklist of activities that businesses can check off on malaria activities will be one of the more effective models for implementation and monitoring. Examples would include what to do for suspected malaria cases, vector control activities and having standardized BCC and IEC programs.

4. **Regulatory framework**: Large companies will pay attention government regulations. Examples include rules that require companies to conduct HIAs and to set a certain amount of their budgets for CSR activities. MDBs such as the ADB and others are already encouraging the inclusion of HIAs in development projects and providing HIA workshops for countries.

5. **Promoting HIAs**: MDBs require countries and companies receiving loans for large infrastructure projects to conduct HIAs. HIAs measure the potential effects of a project on the health of a population, similar to environmental and social impact assessments. Currently, HIAs are not standard practice across much of the Asia Pacific region. MDBs can cooperate with national governments to standardize the requirement for HIAs and provide technical support to businesses to ensure that such assessments are standardized.

6. **Awards and recognition**: Companies that contribute to the malaria elimination efforts – either through CSR or compliance with regulations – can be conferred awards in recognition of their activities. These can include awards, special mentions and acknowledgement, and can concurrently serve as non-monetary incentives for the businesses.
7.3. Regional entities

1. Leveraging ASEAN

Regional multilateral platforms and associations will be crucial in any effort against malaria. The ASEAN, comprising 10 countries of the Southeast Asia Region, is the foremost regional group. In addition to the association itself, ASEAN also has a wider network in the form of the 18-member East Asia Summit which includes Australia, China, India, Japan, Russia, South Korea and the United States. APLMA was created at the 2013 East Asia Summit, and all APLMA member states are in the East Asia Summit.

Involving ASEAN, its associated entities, and other platforms will help create and maintain regional momentum and commitment from political leadership. Although not in the stage of integration as the European Union, ASEAN is moving towards closer integration and common standards. The ASEAN Economic Community was established at the end of 2015.

The ASEAN Secretariat, based in Jakarta, Indonesia, has shown willingness to take malaria elimination on board as an issue and integrate it into its working groups. There is interest and momentum around regional tourism activities, and Indonesia can serve as a platform to address ASEAN policy framework through its working groups on tourism.

Leveraging the multilateral networks under the ASEAN umbrella will be crucial to ensure that countries – particularly those in the GMS that are seeing cases of drug-resistant malaria – adopt guidelines, regulations and best practices. For example, the ASEAN Sustainable Development Committee covers large plantations; the ASEANTA, the ASEAN Health Ministers Meeting, and relevant health clusters under the ASEAN Senior Officials Meeting on Health Development covers issues such as universal health coverage, communicable and emerging infectious diseases and HIAs. Through these platforms, there is potential and opportunity to reach out to other businesses and stakeholders for elimination efforts. Similarly, an ASEAN-wide policy for health CSR or healthcare can galvanize more private sector involvement in malaria elimination.

2. Leveraging regional industry platforms

Industry-specific regional platforms offer another avenue to reach out to businesses. Having a region-wide, industry-specific award for businesses who contribute to malaria elimination efforts can provide greater visibility to businesses’ efforts and encourage wider participation.

3. Recognition

Regional entities can confer awards (such as a “Sponsors to Regional Malaria Elimination” award) or certifications in recognition of companies’ contribution to malaria elimination efforts – either through CSR or compliance with regulations. These awards can be given out by regional entities (e.g., APLMA), business associations (e.g., tourism associations) or via industry gatherings (e.g., the ASEAN Tourism Forum) in conjunction with governments. Such awards and the certification process can be tiered based on a points system.

4. Supporting new regional platforms

Based on interview responses, there are opportunities to create a new private sector platform for malaria elimination within Bangladesh using identified private sector champions in the country. For this report, the authors used a business entity with extensive connections with Bangladeshi businesses to set up interviews. This entity can help establish a private sector platform for the country and galvanize private sector participation in malaria elimination efforts. Regional platforms that link the public and private sectors will be crucial in ensuring that the PPPs are able to meet their potential and contribute to realizing the elimination goal.

5. High-level engagement for policy change

Politicians, be it local parliamentarians or members of the national government, are fundamental in bringing about policy changes and regulations. The involvement of parliamentarians will help elevate specific issues to affect policy change and raise awareness to a wider audience on the national level, especially in countries where malaria is not widely endemic and is confined to certain regions only (such as in Bangladesh and Indonesia). Their positions in government and parliamentary bodies also offer opportunities to bring about regulations and policies that can encourage private sector involvement.

Through APLMA, national political leaders have pledged support to the goal of eliminating malaria in the Asia Pacific by 2030. However, involving politicians and parliamentarians in the policy formulation and implementation process is equally crucial to translate the commitments into actions. Malaria platforms should reach out to politicians in order to maintain national momentum. In Indonesia, which is considered the primus inter pares in ASEAN, and other critical member states, such

For example, the Pacific Asia Travel Awards, with a larger geographic footprint than ASEAN, gives out annual awards and was cited by tourism sector respondents in Indonesia as another possible platform to provide incentivized awards and recognition for tourism sector businesses.

110 Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.
111 Bangladesh is also a member of the East Asia Summit, and Papua New Guinea is a candidate for membership.
112 Personal interviews with staff of the ASEAN Secretariat and exchanges with relevant ASEAN officials.
engagement can have an impact on other association members.

7. Promoting health security
Regional platforms should promote the concept of health security to governments and the private sector in order to frame the challenge of malaria in a wider context, and to maintain momentum in the face of declining malaria case numbers. Highlighting the linkages between malaria elimination, drug resistance and regional health security will make a stronger case for the private sector to view their investments as having wider impact.
8. Conclusion

The report identified opportunities for private sector investment in malaria control and elimination. Factors and policies contributing to or inhibiting private sector investment in malaria control and elimination were also reflected.

Strategic opportunities for engagement exist to build on existing platforms. Given recent economic decline, there is a need to focus on opportunities within existing core business operations to increase malaria awareness and malaria-related activities within the private sector. There are opportunities for in-kind assistance or contributions that leverage the private sector’s core strengths, such as helicopters to transport commodities in remote areas. Furthermore, PPPs will be crucial to maximize the effects of current private sector investment.

Employee welfare, safety and productivity were the main motivators for all companies to invest in malaria and other health programs. Companies can maintain passive surveillance and a commitment to test all fever cases for malaria.

An important factor is to focus on engagement of various partners and stakeholders in impact assessments and to ensure that HIAs are included as part of the larger impact assessment process. Reporting and data from the private sector including the extractive industry and plantation sectors would serve as useful entry points for PPPs.

There is a high momentum and responsiveness from the tourism sector. There are opportunities to engage with partners in increasing tourism activities including ecotourism and new tourism locations in areas where malaria is still endemic. Hotels across the board are doing something to protect their clients and hotel guests. The opportunity is to work with the tourism sector to both raise awareness and increase engagement.

In order to regain visibility on malaria, it will be essential to understand the strategic decision making processes of foundations as well as corporations by examining broad structures, committee composition and their distinct operational modalities both “inside the fence” and “outside the fence;” it is an essential component for the private sector to stay in the game, including to invest more into malaria elimination efforts. The use of new tools or metrics such as the “lost time to malaria frequency rate” can help keep senior management focused on the elimination agenda.

There is a need to focus on value proposition, regulatory issues, checklists and minimum deliverables. Governments can play a role in regulatory frameworks that include malaria prevention and elimination activities for the oil and gas, mining, plantation and tourism sectors.

Mobilizing the private sector will be crucial for the region to achieve malaria elimination by 2030. Companies across the region have been engaged in malaria interventions. However, there is loss of momentum and a setback to private sector involvement in the face of declining malaria cases coupled with economic downturn. There is an urgent need for the public sector to re-engage the private sector while recognizing the distinct ways in which the private sector operates and its expectations for involvement in malaria elimination.
References


ASEAN Secretariat, December 2015. Fact Sheet on ASEAN Economic Community.


### Annex 1: Interview List

1. Bangladesh

<table>
<thead>
<tr>
<th>Location</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chittagong Hill Tracts</td>
<td>• Plantation sector (tea)</td>
</tr>
<tr>
<td>Sylhet Division</td>
<td>• Plantation sector (tea)</td>
</tr>
<tr>
<td>Dhaka</td>
<td>• Tourism sector (hotel and airlines)</td>
</tr>
</tbody>
</table>

2. Indonesia

<table>
<thead>
<tr>
<th>Location</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denpasar</td>
<td>• Tourism sector (hotel and airlines)</td>
</tr>
<tr>
<td></td>
<td>• Plantation sector (coffee)</td>
</tr>
<tr>
<td>Jakarta</td>
<td>• Oil and gas sector</td>
</tr>
<tr>
<td></td>
<td>• Tourism sector (Ministry of Tourism, Airline Association)</td>
</tr>
<tr>
<td></td>
<td>• Plantation sector (field/headquarter base)</td>
</tr>
</tbody>
</table>

3. Papua New Guinea

<table>
<thead>
<tr>
<th>Location</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Moresby</td>
<td>• Plantation sector (rubber, palm oil)</td>
</tr>
</tbody>
</table>
## Annex 2: Summary of Responses from the Three Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Malaria prevention activities</th>
<th>Perceptions on malaria and malaria elimination</th>
<th>Perceptions on private sector involvement</th>
<th>Motivators/incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bangladesh</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airline 1</td>
<td>Insecticide spraying through training programs</td>
<td>Malaria is a health concern; awareness through training programs</td>
<td>Sees a need for a strong public sector/regulatory approach; not eager for involvement in raising funds</td>
<td>Profits, health and safety of staff and passengers</td>
</tr>
<tr>
<td>Airline 2</td>
<td>Insecticide spraying through training programs</td>
<td>Malaria is an important issue; public sector should tackle</td>
<td>Sees a need for a strong public sector/regulatory approach; not eager for involvement in raising funds; does not perceive malaria as an issue that private sector can solve</td>
<td>Health and safety of staff and passengers</td>
</tr>
<tr>
<td>Airline 3</td>
<td>No specific actions for malaria; insecticide spraying</td>
<td>Malaria is not a big issue</td>
<td>Open to collaboration; sees best approach as educating airlines and involving local regulatory body</td>
<td>Health and safety of staff and passengers</td>
</tr>
<tr>
<td><strong>Hotel 1</strong></td>
<td>Room cleaning; no outdoor spraying</td>
<td>Malaria and other mosquito-borne diseases are of concern</td>
<td>Not eager for involvement in raising funds; sees malaria as an issue to be tackled by the public sector</td>
<td>Health and safety of staff and guests</td>
</tr>
<tr>
<td><strong>Hotel 2</strong></td>
<td>Daily outdoor insecticide spraying; no stagnant waters</td>
<td>Malaria is a health concern</td>
<td>Eager for involvement; no idea on how private sector can be involved</td>
<td>Productivity; employee welfare</td>
</tr>
<tr>
<td><strong>Plantation 1</strong></td>
<td>Awareness program</td>
<td>Malaria is not a big issue</td>
<td>Approaches the industry association (Tea Association) for public-private or private-private partnerships</td>
<td>Employee productivity; Medical support as a corporate priority</td>
</tr>
<tr>
<td><strong>Plantation 2</strong></td>
<td>Medical center; awareness program; encourage use of bednets and repellents</td>
<td>Malaria is a health concern</td>
<td>Does not see malaria as an issue that private sector can solve</td>
<td>Productivity; employee welfare</td>
</tr>
<tr>
<td><strong>Plantation 3</strong></td>
<td>Permanent health center; training program; encourage use of bednets and repellent creams</td>
<td>Malaria is a health concern</td>
<td>Approaches the industry association (Tea Association) for public-private or private-private partnerships</td>
<td>Productivity; employee welfare</td>
</tr>
</tbody>
</table>
### Indonesia

<table>
<thead>
<tr>
<th>Hotel 1</th>
<th>Repellents; salt crystals in sewage; mosquito repellent plants, outdoor and bathroom spraying</th>
<th>Dengue as major health issue; Zika as a major concern; malaria not of concern</th>
<th>Hotel CSRs mainly focus on children and environment. Not much on health</th>
<th>Recognition/certification by international accreditation body; social media</th>
<th>Lack of awareness by industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotel 2</td>
<td>Fogging; mosquito repellent plants; mosquito coils</td>
<td>Dengue is a major health issue. Malaria not of concern</td>
<td>Eager to collaborate but wants clear guidelines and instructions from public sector</td>
<td>Guest safety and health; Recognition by regional/international body</td>
<td>Low awareness by industry of malaria and other diseases</td>
</tr>
<tr>
<td>Tourism KI 1</td>
<td>Vector control measures provide assurance to guests</td>
<td>Dengue is an issue</td>
<td>Changing tourism market. Private sector is too busy to anticipate outbreaks. They need to work with local governments</td>
<td>Recognition/certification/award by tourism body</td>
<td>The management needs to be willing and on board</td>
</tr>
<tr>
<td>Tourism KI 2</td>
<td>Zika and Dengue are threat to tourism industry</td>
<td>Tourism is a very sensitive industry to health problems, but needs awareness of the challenges and what it can do to contribute</td>
<td>Highlight to tourism industry the impact of the diseases.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism KI 3</td>
<td>Dengue is a major issue. It is because of changes in the environment</td>
<td>Government needs to show private sector engagement. Businesses do not want to overlap with government activities. If activities are part of the standard operating procedure, it is easier to comply and undertake action</td>
<td>Crisis management and planning expertise for those in tourism sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism KI 4</td>
<td></td>
<td>Tourism sector’s collaboration with public sector not new; public sector can provide needed support</td>
<td>Local, regional and international tourism-related associations and their awards as major incentives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism KI 5</td>
<td></td>
<td>Government / public sector lead will get private sector to follow</td>
<td>Recognition / certification / award by tourism body</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism KI 6</td>
<td>Dengue is a major health issue. Malaria not of concern</td>
<td>Need to make government aware and encourage private sector for involvement</td>
<td>Regional goal for tourism industry as a driver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantation and country KI1</td>
<td>Contractors and daily laborers often not covered by insurance</td>
<td>Need strong economic arguments that appeals to core business. New tourism locations are malaria endemic and under-developed - can link tourism to malaria and development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plantation 1/Hotel 3</td>
<td>Government health insurance coverage</td>
<td>No malaria or dengue</td>
<td>CSR mainly focuses on education</td>
<td>Visible regional / global certification</td>
<td>Lack of Information</td>
</tr>
<tr>
<td>Industry</td>
<td>Activity/Initiative</td>
<td>Health Challenges/Actions Taken</td>
<td>Key Considerations</td>
<td>Sustainability Focus</td>
<td></td>
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<td>------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
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</tr>
<tr>
<td>Plantation 2</td>
<td>BCC and IEC campaigns once a year for employees; district doctor visits; on-site</td>
<td>Malaria and dengue are not issues</td>
<td>Has to relate to core business. Willing to cooperate, but prefers exclusivity of</td>
<td>Employee welfare and productivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clinics and paramedics; health insurance (for accidents and injuries)</td>
<td></td>
<td>action; government/public sector needs to step in; need to know the minimum</td>
<td>Sustainability on landscape approach</td>
<td></td>
</tr>
<tr>
<td>Oil and Gas K1</td>
<td>International oil and gas companies operating in forest areas</td>
<td></td>
<td>benchmark and have a checklist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td></td>
<td></td>
<td>Effectiveness in spending against malaria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil and Gas 1</td>
<td>Management of high risk profiles among staff, active case detection and management</td>
<td>Malaria is tracked, but cases have declined in recent years. Increasing number of imported cases</td>
<td>Already an actively involved company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation 1</td>
<td>LLIN distribution; clinics; awareness program; outreach program to isolated</td>
<td>Malaria is on the decline</td>
<td>Board composition plays a major role in determining company involvement</td>
<td>Tax credit scheme</td>
<td></td>
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<tr>
<td></td>
<td>communities</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mining 1 / Foundation 2</td>
<td>Runs a hospital; distribute bednets through</td>
<td>Malaria is no longer a big issue</td>
<td>Already an actively involved company</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation 3</td>
<td>Occupational health and safety program; clinics; distribution of LLINs; RDT testing;</td>
<td>Malaria is no longer a big issue</td>
<td></td>
<td>Health as one of strategic sectors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Previously did fogging and IRS but have ceased</td>
<td></td>
<td></td>
<td>Lack of health commodities; logistics and</td>
<td></td>
</tr>
<tr>
<td>Plantation 1</td>
<td></td>
<td></td>
<td></td>
<td>procurement issues</td>
<td></td>
</tr>
<tr>
<td>Foundation 3</td>
<td></td>
<td></td>
<td></td>
<td>Difficulties in recruiting trained health staff; inadequate budget, equipment and</td>
<td></td>
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<tr>
<td></td>
<td>Malaria was previously a major health issue, but no longer</td>
<td></td>
<td></td>
<td>supplies</td>
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</tbody>
</table>
Annex 3: Interview Guidelines and Questionnaires

1. Interview guidelines

Introduction: This questionnaire intends to garner suggestions and viewpoints from private sector respondents on involving the private sector for malaria elimination. The following questions will explore:

- How to promote the private sector investment in malaria
- Issues and challenges for private sector involvement
- Perspectives and recommendations from the private sector
- Issues in creating public-private partnerships
- Malaria and private sector responses, including corporate social responsibilities (CSR)
- Incentives and disincentives for the private sector investment in malaria
- How businesses with existing CSR or malaria programmes quantify the returns of their programmes

Target Audience: The questionnaire is for owners and managers of businesses – both multinational and local, large corporations and small and medium enterprises (SMEs) – with operations in malaria endemic regions. The questionnaire will be used to develop business cases for private sector investment in malaria, including industry case studies illustrating best practices. The questionnaire will help garner a better understanding of the private sector’s perspectives on becoming involved in public-private partnerships for malaria elimination.

Malaria responses by Private Sector: Depending on individual businesses, there may or may not be health-related programmes for their workforce, families and communities (general and/or malaria-specific). Some entities may view such programmes as part of their corporate social responsibilities, while others may regard these as part of routine operations.

Target Sectors: Plantations (Rubber, tea, palm oil, coffee, etc.), Oil & Gas operations and Tourism in malaria-endemic countries.

Attribution and consent: Respondents will be requested for verbal consent to participate in the questionnaires. Respondents will be informed that notes will be taken of their answers. Respondents will also be asked whether they wish to be identified or remain anonymous. If they wish to remain anonymous, the notes will not contain any information that will allow the respondents to be linked to specific statements.

Background: The next page is a brief background to help contextualise the INTERVIEWER with the malaria situation in the Asia-Pacific Region.

Power point presentation: A power point presentation is included in the interview package. It is a brief background for the RESPONDENT. Printout may be provided to aid the interview process.

2. Background

Malaria is a major communicable disease targeted for elimination in the 21st century. In the Asia Pacific region, malaria is present in 20 countries with around 260 million people living in high-transmission areas. According to the World Health Organisation, there were 2.14 million malaria cases and 44 000 malaria deaths in the region in 2015. The World Health Organisation has set the goal of reducing malaria by 90 percent by the year 2030. Within the region, the Asia Pacific Leaders’ Malaria Alliance (APLMA) also aims to eliminate malaria by 2030 through its roadmap.

Malaria morbidity and mortality are declining across the region. However, drug resistant malaria – where the malaria parasites develop resistance to the front line anti-malaria drugs – is on the rise and threatens the gains made to date. The Greater Mekong Sub-region is the global hotspot for artemisinin resistance, and eliminating malaria is the best option to prevent the spread of drug resistance. If the APLMA malaria elimination roadmap is fully implemented, it will save more than a million lives and deliver USD 300 billion in economic benefits.

The private sector – comprising multinational corporations, small and medium enterprises, and private health providers – is a crucial partner in the region’s pursuit of malaria elimination. The Private sector will play an important role in finding innovative solutions, mobilising resources, ensuring the coverage of hard-to-reach and mobile migrant populations, and implementing malaria elimination activities. It is believed that there is considerable potential for private sector entities as a crucial partner for regional malaria control and elimination, particularly for private companies whose work sites are often in remote, high-transmission areas and whose productivity is directly impacted by malaria incidence.
3. Questionnaire for plantation sector

(Note: Document modified from original. Answer spaces removed for space constraints.)

1. How big is your operation? How many employees are full time, and how many are part-time (for example, during harvest season)?
2. Where do your employees come from?
3. Do they stay on your farm/plantation?
4. What are the main health challenges of your employees? Is malaria an issue? What about dengue? Do you think these health challenges impact your productivity/profitability?
5. Do you provide health programmes or activities for your employees and their families?
   a. If YES, proceed to QUESTION 6
   b. If NO, proceed to QUESTION 11

6. What are the activities/arrangements? Does it include malaria-specific activities (such as providing bed nets/long-lasting insecticide treated nets, information/education sessions, spraying of insecticides/fogging)?
7. What are the drivers for your business to conduct the health programmes?
8. What do you think are the issues or challenges confronting your business’s health programme?
9. Do you measure the impact/returns of your operation/business’s health programme? If so, how do you measure (financial, non-financial)?
   (Proceed to QUESTION 12 and onwards)

Continued from QUESTION 5b

10. Why is your operation not involved in health programmes? What are the barriers/challenges?
11. What support does your business/operation need from local government to become involved in malaria programmes?
   (Proceed to QUESTION 12 and onwards)

Continued from QUESTION 9/QUESTION 12

12. What can the government do to incentivise companies/businesses to conduct health programmes for their workforce? (E.g. legislation, tax relief)
13. We are looking at malaria elimination within the context of health security, due to the rise in drug resistant malaria, a dengue resurgence and the threat from Zika. Agriculture remains a major source of employment and contributor to national economies in the region. How can we get the agriculture sector on board to be a partner in addressing health security issues in the region?

Public-private partnerships are where businesses (“the private sector”) partner up with government departments (“the public sector”) to address pressing issues. These partnerships can be at local, national or global level, and are important components in the Asia-Pacific region’s efforts for controlling malaria and other communicable and non-communicable diseases.

| Agriculture sector | • Public-Private Partnership between the Malaysian State of Sabah and private rubber and palm oil plantations
|                    | • Plantation malaria workers in Cambodia |
| Other Sectors      | • AngloGold Ashanti Mining Company in Ghana |
| (Mining, Oil and Gas, Tourism, etc.) | • Marathon Oil Company in Equatorial Guinea |
|                    | • Oil Search Limited in Papua New Guinea |
|                    | • Pilipinas Shell Foundation in Palawan, the Philippines |
|                    | • Total SA in Myanmar |
|                    | • Tourism levy in Zanzibar |
|                    | • UNITAID airline levies |

14. Do you have any thoughts on how your business can contribute to eliminating malaria in your region or country? What would be the incentives for your business to invest in malaria elimination?
15. Is there any other information that you think we should know?

Thank you for your time in participating in our questionnaire. Your contribution is valuable to us.
4. Questionnaire for oil and gas sector
(Note: Document modified from original. Answer spaces removed for space constraints.)

1. How big is (are) your operation(s)? What is the breakdown of your on-site workforce (full-time, part-time)?
2. Where do your employees come from?
3. Do they stay on your project site?
4. What are the main health challenges of your employees? Is malaria an issue? What about dengue? Do you think these health challenges impact your productivity/profitability?
5. Do you provide health programmes or activities for your employees and their families?
   a. If YES, proceed to QUESTION 6
   b. If NO, proceed to QUESTION 10

6. What are the activities/arrangements? Is it part of your corporate social responsibility (CSR)? (That is, not just for employees, but also for surrounding communities) Does it include malaria-specific activities (such as providing bed nets/long-lasting insecticide treated nets, information/education sessions, spraying of insecticides/fogging)?
7. What are the drivers for your operation to conduct the health programmes?
8. What do you think are the issues or challenges confronting your operation’s health programme?
9. Do you measure the return on investment of your operation’s health programme? If so, how do you measure (financial, non-financial)?

(Proceed to QUESTION 12 and onwards)

Continued from QUESTION 5b

10. Why is your operation not involved in health programmes? What are the barriers/challenges?
11. What support does your business/operation need from local government to become involved in malaria programmes?

Proceed to QUESTION 12 and onwards

Continued from QUESTION 9/QUESTION 12

12. Do you conduct any environmental and/or health impact assessments prior to commencing operations?
13. What can the government do to incentivise companies to undertake health programmes for their workforces? (E.g. legislation, tax relief, etc.)
14. Malaria is on the decline. This might prompt companies to divert their malaria programmes/malaria-related CSR activities elsewhere. At the same time, drug-resistant malaria is on the rise and this threatens the gains made to date as we have no second-line drug. How do we collectively convince senior management on continuing CSR commitments and becoming more involved in the malaria elimination agenda?

Public-private partnerships are where businesses (“the private sector”) partner up with government departments (“the public sector”) to address pressing issues. These partnerships can be at local, national or global level, and are important components in the Asia-Pacific region’s efforts for controlling malaria and other communicable and non-communicable diseases.

| Oil and Gas Sector | • Marathon Oil Company in Equatorial Guinea  
| Other Sectors |  
| (Mining, Plantation, Tourism, etc.) | • Oil Search Limited in Papua New Guinea  
| | • Pilipinas Shell Foundation in Palawan, the Philippines  
| | • Total SA in Myanmar  
| | • AngloGold Ashanti Mining Company in Ghana  
| | • Public-Private Partnership between the Malaysian State of Sabah and private rubber and palm oil plantations  
| | • Tourism levy in Zanzibar  
| | • UNITAID airline levies  

15. Do you have any thoughts on how your business can contribute to eliminating malaria in your region or country? What would be the incentives for your business to invest in malaria elimination?

16. Is there any other information that you think we should know?

Thank you for your time in participating in our questionnaire. Your contribution is valuable to us.
5. Questionnaire for tourism sector – airlines  
(Note: Document modified from original. Answer spaces removed for space constraints.)

1. How big is your operation? How many employees do you have?
2. What are the main routes of your airline? Is there a peak season?
3. Which ministries, government entities and other associations do your business collaborate with?
4. What do you see as the main health challenges in your line of work? Is malaria an issue? What about dengue? Do you think these health challenges impact your productivity/profitability?
5. Do you think the health status of the regions that your airline flies to affects your business’s productivity/profitability? (example, diseases deterring visitors from coming)
6. What activities do your business do to protect your staff, especially ground crew, from vector-borne diseases (e.g. Dengue, Malaria, Zika, etc)?
7. Tourism has been strongly affected by health issues such as during the SARS epidemic – discouraging tourists from traveling to affected areas. Was your business affected by such?
8. We are looking at malaria elimination within the context of health security, due to the rise in drug resistant malaria, a dengue resurgence and the threat from Zika. At the same time, global and regional travel is increasing. Visitor arrivals in the Asia-Pacific region has an average annual growth rate of 6.2 percent and reach 660 million by 2018. How can we get the aviation, travel and tourism sector on board to be a partner in addressing health security issues in the region?
9. Do you have any thoughts on how your business can contribute to eliminating malaria in your region or country? What would be the incentives for your business to invest in malaria elimination?

Tourism-related businesses around the world are involved in charitable activities for various causes.

<table>
<thead>
<tr>
<th>Hotels</th>
<th>Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hilton’s HHonors programme</td>
<td></td>
</tr>
<tr>
<td>• InterContinental Hotel Group</td>
<td></td>
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<tr>
<td>• Starwood Hotels’ Check Out for Children</td>
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<tr>
<td>• Solidarity AccorHotels</td>
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<tr>
<td>• BookDifferent by Booking.com</td>
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<tr>
<td>• Hotels for Hope</td>
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<tr>
<td>• UNITAID’s Air Ticket Solidarity Levy</td>
<td></td>
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<tr>
<td>• Cathay Pacific and Unicef’s “Change for Good”</td>
<td></td>
</tr>
<tr>
<td>• The Emirates Airline Foundation</td>
<td></td>
</tr>
<tr>
<td>• Air-mile Donation Programmes</td>
<td></td>
</tr>
</tbody>
</table>

10. As somebody who has been working in the industry, can you give us ideas and suggestions on ways to generate charitable giving and/or voluntary donations?
11. Do you think businesses in the aviation, travel and tourism sector will be willing to participate in voluntary charitable programmes that raise funds through bookings and transactions? (such as asking guests for a contribution, or allocating a portion of the business’s commission fees/profits)
12. Based on experience with your clientele, do you think travellers will be receptive of such a charitable giving initiative?
13. What would you suggest are good incentives for encouraging both travellers and businesses to participate in such initiatives?
14. Within the line of your work, how do you think we can raise awareness about malaria elimination?
15. Is there any other information you think we should know?

Thank you very much for your time in participating in our questionnaire. Your contribution is valuable to us.
6. Questionnaire for tourism sector – hotels
(Note: Document modified from original. Answer spaces removed for space constraints.)

1. How big is your operation? How many employees do you have?
2. What is the average occupancy rate? Is there a peak season?
3. Which ministries, government entities and other associations do your business collaborate with?
4. What do you see as the main health challenges in your line of work? Is malaria an issue? What about dengue? Do you think these health challenges impact your productivity/profitability?
5. Do you think the health status of your business’s surrounding region affects your business’s productivity/profitability? (example, diseases deterring visitors from coming)
6. What activities do your business do to protect your hotel guests from vector-borne diseases (e.g. Dengue, Malaria, Zika, etc.)?
7. Tourism has been strongly affected by health issues – such as during the SARS epidemic – discouraging tourists from traveling to affected areas. Was your business affected by such?
8. We are looking at malaria elimination within the context of health security, due to the rise in drug resistant malaria, a dengue resurgence and the threat from Zika. At the same time, global and regional travel is increasing. Visitor arrivals in the Asia-Pacific region has an average annual growth rate of 6.2 percent and reach 660 million by 2018. How can we get the tourism sector on board to be a partner in addressing health security issues in the region?
9. Do you have any thoughts on how your business can contribute to eliminating malaria in your region or country? What would be the incentives for your business to invest in malaria elimination?

Tourism-related businesses around the world are involved in charitable activities for various causes.

| Hotels | • Hilton’s HHonors programme  
• InterContinental Hotel Group  
• Starwood Hotels’ Check Out for Children  
• Solidarity AccorHotels  
• BookDifferent by Booking.com  
• Hotels for Hope |
| Agriculture sector | • Public-Private Partnership between the Malaysian State of Sabah and private rubber and palm oil plantations |
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• AngloGold Ashanti Mining Company in Ghana  
• Marathon Oil Company in Equatorial Guinea  
• Oil Search Limited in Papua New Guinea  
• Pilipinas Shell Foundation in Palawan, the Philippines  
• Total SA in Myanmar |

10. As somebody who has been working in the industry, can you give us ideas and suggestions on ways to generate charitable giving and/or voluntary donations?
11. Do you think businesses in the tourism sector will be willing to participate in voluntary charitable programmes that raise funds through bookings and transactions? (such as asking guests for a contribution, or allocating a portion of the business’s commission fees/profits)
12. Based on experience with your clientele, do you think travelers will be receptive of such a charitable giving initiative?
13. What would you suggest are good incentives for encouraging both travelers and businesses to participate in such initiatives?
14. Within the line of your work, how do you think we can raise awareness about malaria elimination?
15. Is there any other information you think we should know?

Thank you very much for your time in participating in our questionnaire. Your contribution is valuable to us.