

**MINISTRY OF HEALTH**

**NATIONAL STRATEGIC PLAN  
ON  
MALARIA CONTROL AND ELIMINATION  
2021 - 2025**

**Ha Noi - 2020**

## CONTENTS

<b>I. BACKGROUND</b> .....	1
1.1 Introduction .....	1
1.2 Country Profile .....	2
1.3 Malaria Situational Analysis.....	2
1.3.1 Malaria Epidemiology.....	3
1.3.2 Drug Resistance .....	4
1.4 Malaria Stratification .....	5
1.5 Health Systems and Community Systems Context.....	6
1.6 Health System Oversight in Relation to Malaria.....	7
1.7 Human Resources for Health.....	8
<b>II. EVALUATION OF MALARIA CONTROL AND ELIMINATION IN THE PERIOD OF 2015 – 2019</b> .....	9
2.1 Results of the implementation of malaria control and elimination in the period of 2015 – 2019.....	9
2.1.1 Malaria control and elimination indicators: .....	9
2.1.2 Results of malaria epidemiological stratification in 2019 .....	9
2.1.3 Progress on drug resistance.....	10
2.1.4 Malaria transmitting mosquito distribution and the situation of insecticide resistance .....	10
2.1.5 Situation of mobile and migrant populations, cross-border populations and malaria transmission .....	10
2.2 Malaria control and elimination system.....	10
2.3 Key malaria control and elimination implementation .....	11
2.3.1 Direction and Management.....	11
2.3.2 Technical activities.....	11
2.4 Investment in malaria control and elimination activities in period 2015 – 2019.....	12
2.5 Opportunities and challenges of malaria control & elimination activities in period 2015 – 2019 .....	13
2.5.1 Opportunities.....	13
2.5.2 Challenges.....	13
<b>III. ACTION PLAN FOR PERIOD 2021 – 2025</b> .....	15
3.1 Legal basis .....	15
3.2 Goal.....	15
3.2.1 Overall Goals.....	15
3.2.2 Specific objectives and targets .....	16
3.3 Solutions.....	17
3.3.1 Strengthen health information, education and communication.....	17

3.3.2	<i>Technical solutions</i> .....	17
3.3.3	<i>Solutions for testing, monitoring and evaluating malaria control and elimination program</i> ...	18
3.3.4	<i>Strengthening resources and investment</i> .....	19
3.3.5	<i>Cooperation and community mobilization</i> .....	19
3.3.6	<i>Solutions for scientific research</i> .....	20
3.4	<b>Main activities</b> .....	20
3.4.1	<i>Ensure that all people have better access to early diagnosis, prompt and effective treatment of malaria at the public and private health facilities</i> .....	20
3.4.2	<i>Cover all people at risk of malaria with appropriate and effective vector control measures</i> ...	23
3.4.3	<i>Improve malaria epidemiological surveillance system and ensure sufficient capacity for malaria epidemic response</i> .....	25
3.4.4	<i>Improve knowledge and behaviors of people regarding to malaria to empower them to protect themselves against malaria</i> .....	27
3.4.5	<i>Provide effective management and coordination of the national malaria control and elimination effort; eliminate malaria in endemic provinces; prevent malaria re-establishment in malaria eliminated provinces</i> .....	28
3.5	<b>Action plan – Detailed Budget Allocation 2021 – 2025</b> .....	30
3.6	<b>Implementation</b> .....	30
3.6.1	<i>Ministry of Health (MoH) and Ministerial Units</i> .....	30
3.6.2	<i>Other related Ministries/Agencies</i> .....	33
3.6.3	<i>Local authorities</i> .....	34
<b>IV</b>	<b>ANNEXES</b> .....	37
Annex 1:	Epidemiological Stratification Map 2019 .....	37
Annex 2:	Drug Resistant Parasite Distribution 2019 .....	38
Annex 3:	Malaria transmitting mosquito distribution 2019 .....	39
Annex 4:	Aggregate report of malaria morbidity rate per 1,000 population And malaria mortality rate per 100,000 population in the period 2016-2019 and projection for 2021-2025 .....	40
Annex 5:	Malaria Elimination Roadmap .....	41

**MALARIA CONTROL AND ELIMINATION PLAN FOR THE PERIOD  
2021 - 2025**

*(Issued under the Decision No:   /QĐ-BYT dated    /    /  
by Minister of Health)*

**I.    BACKGROUND**

**1.1 Introduction**

Viet Nam has made impressive gains in malaria control in the past few years and it is well positioned to reach its goal to eliminate malaria by 2030. The burden of malaria in Viet Nam has decreased in recent years with improvements in socio-economic conditions coupled with investments of government and partners in vertically driven malaria control and elimination operations all the way to the community level. From 2010 to 2019, the number of confirmed malaria cases decreased 73%, from 17,515 to 4,665. The vast majority of malaria cases are caused by *Plasmodium falciparum* (67% in 2019) and *P. vivax* (32% in 2019). Intense malaria transmission is largely restricted to hilly, forested areas in southern and central provinces where malaria transmission tends to be perennial with a seasonal peak in December–February. In the northern region, transmission is increasingly sporadic.

In 2019, Viet Nam has an estimated population of 96 million with 7.5 million people living in malaria endemic areas. Thus, while malaria cases and deaths have been reduced drastically, challenges to eliminate malaria in the country remain as the disease is concentrated in at-risk populations living in hard-to-reach areas. Despite expansion of access to diagnosis and treatment and availability of tools for vector control, the progress achieved thus far can be undermined quickly by the development and spread of insecticide and drug resistance. Regional and national malaria elimination is likely to be the only approach to halt the establishment of multi-drug resistance and prevent the spread of untreatable *P. falciparum* malaria.

The *National Strategic Plan on Malaria Prevention and Elimination Period 2021 - 2025* seeks to build on the previous national successes of the National Institute of Malariology, Parasitology, and Entomology (NIMPE) while addressing current challenges to reduce the overall burden of malaria in the Southern and Central provinces and to initiate elimination activities in remaining focal areas of transmission throughout the country. The overall targets proposed to be reached by 2025 are:

- Reduce malaria morbidity rate to below 0.015/1,000 population;
- Reduce malaria mortality rate to below 0.002/100,000 population;
- Eliminate malaria in 55 provinces;
- Ensure no malaria outbreaks.

To address the urgent threat of drug resistance, Viet Nam has committed to accelerate efforts to eliminate locally-acquired *P. falciparum* by 2023.

## 1.2 Country Profile

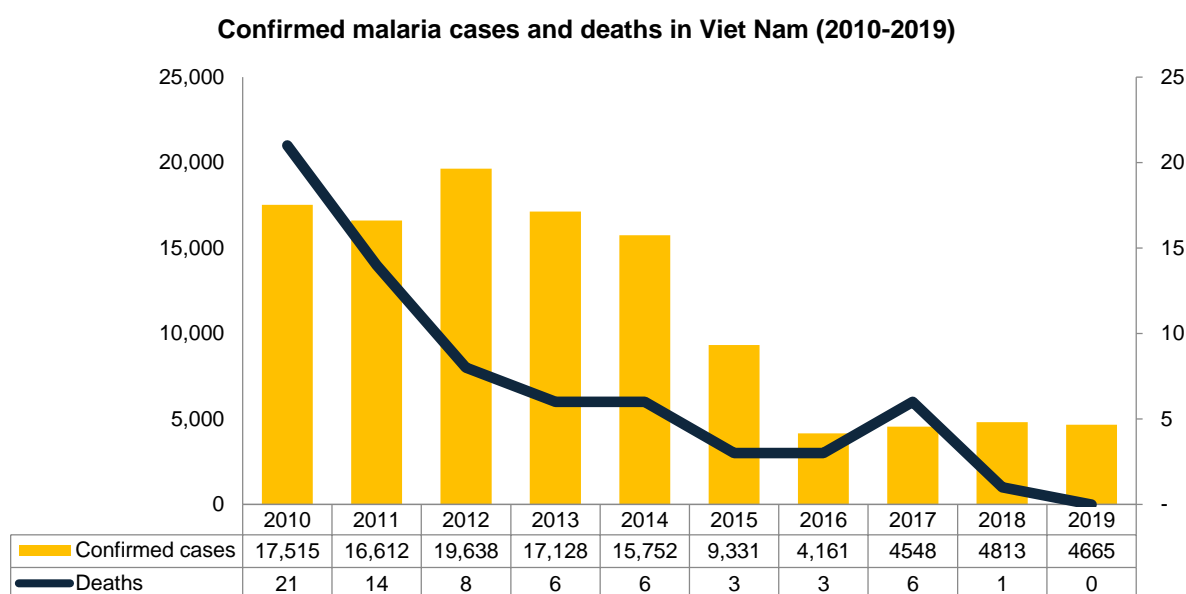
Viet Nam is a South-East Asian country of about 96 million people, that borders China in the north, has a long border with Laos on the west, and borders Cambodia in the southwest. Viet Nam shares maritime borders with Indonesia, Malaysia, Philippines, and Thailand. The country is comprised of 63 provinces, which are further subdivided into 713 districts and 11,160 communes. The capital is Hanoi, while the financial center and the largest city is Ho Chi Minh City with a population of about 8.5 million.

Viet Nam is a lower middle-income country with a gross domestic product (GDP) of about US\$ 2,500 per capita per year (World Bank, 2018). There are 53 ethnic groups inhabiting Viet Nam. The official national language is Vietnamese, though other ethnic minority languages are spoken in different parts of the country. Its health-care service and management systems are organized into four administrative levels: central, provincial, district and communes.

## 1.3 Malaria Situational Analysis

The epidemiology of malaria in Viet Nam is highly complex, varying from location to location and from one population group to another.

In the past 10 years, Viet Nam has achieved impressive results in malaria control and elimination, as the rates of malaria morbidity and mortality have decrease continually, year after year. In 2019, malaria case burden decreased by 50% in comparison with 2015, while for the same period, the number of malaria deaths decreased to 0 in 2019. Despite no malaria outbreaks having been reported in the past 5 years, the overall declining trend of malaria has stagnated in the past few years – with a slight increase in 2018.



In recent years, malaria has become more focalized with 97% of confirmed cases in the central and southern regions, and 94% of those cases in 15 of Viet Nam’s 63 provinces. In Binh Phuoc, the province with the most confirmed cases in 2017, half of the cases were reported from just one of its 11 districts.

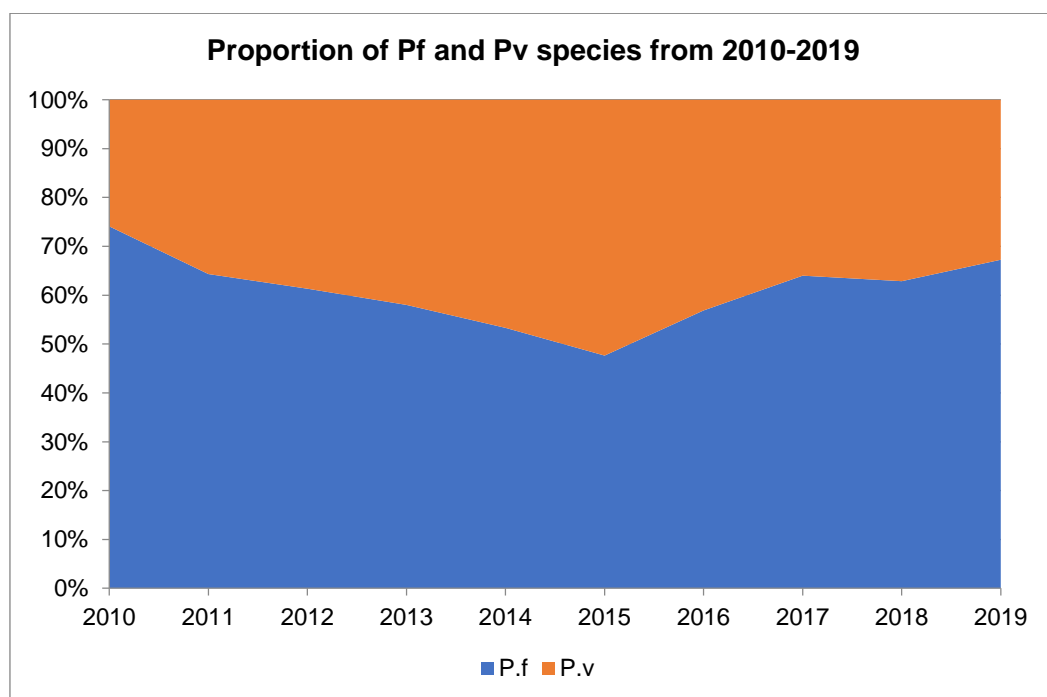
The goal of the National Strategy for Malaria Control and Elimination is to actively control malaria in moderate and high endemic areas and to eliminate malaria in areas where malaria has been reduced to a low level. The targets for 2020, such as: morbidity below 0.15 per 1000 population, mortality below 0.02 per 100 000 population and malaria eliminated in at least 40 provinces, have all been achieved.

Going forward, the National Strategic Plan for Malaria Control and Elimination 2021-2025, set the goal of achieving malaria elimination by 2030, while committing to interrupt local transmission of *Plasmodium falciparum* by 2023.

### 1.3.1 Malaria Epidemiology

#### 1.3.1.1 Parasites

While all four species of human plasmodia are present in Viet Nam, the vast majority of malaria cases are caused by *P. falciparum* (67% in 2019) and *P. vivax* (32% in 2019). From 2011 to 2015, a downward trend in the proportion of *P. falciparum* cases was observed from 61% in 2011 to 46% in 2015, while the proportion of the *P. vivax* cases increased from 34% in 2011 to 51% in 2015. However, since 2015, a resurgence of *P. falciparum* was recorded, as it can be observed in the graph below.



#### 1.3.1.2 Vectors

There are three recognized malaria vectors in Viet Nam: *Anopheles minimus*, *Anopheles dirus* and *Anopheles epiroticus*.

- *Anopheles minimus* mosquitoes are widely distributed within Viet Nam and can trigger malaria outbreaks in receptive areas. *Anopheles dirus* mosquitoes are mainly distributed in the Central Highland region, while *Anopheles epiroticus* mosquitoes are mainly distributed in the Southern region of the country.
- *Anopheles minimus* and *Anopheles dirus* malaria transmitting mosquitoes show a tendency to be slightly more exophagic in its feeding behavior, often resting and feeding outdoors. Therefore, although they are not achieving their highest possible impact, the use of long-lasting insecticidal nets (LLINs) and indoor residual spraying (IRS) have proved to be effective means of malaria control and continue to play a critical role in reducing malaria transmission.

- *Anopheles epiroticus*, the main malaria transmitting vectors of the Southern region, has been determined to be resistant to Pyrethroid chemicals.

### 1.3.1.3 Transmission

Intense malaria transmission is largely restricted to hilly, forested areas in southern and central provinces where malaria transmission tends to be perennial with a seasonal peak in December–February. In the northern region, transmission is low and increasingly sporadic. The constant increase of migrant workers in the agriculture and tourism pose a constant threat for the reintroduction of the plasmodium parasites into malaria free areas.

### 1.3.1.4 Population at risk

The highest static at-risk groups for malaria include the ethnic minority (EM) groups. Other high-risk groups for malaria, within the static population, are represented by new forest settlements, camps associated with large scale construction projects (dams, bridges) and new settlements on or near plantations (rubber, palm oil, etc.).

Mobile population groups at risk for malaria are:

- Traditional slash-and-burn and paddy field farming communities visiting their forest farms (commonly EMs)
- Seasonal agricultural labourers
- Military patrols
- Forest workers in the formal sector (police, border guards, forest/wildlife protection services)
- Forest workers in the informal sector (hunters, small-scale gem/gold miners, people gathering forest products [precious timber, construction timber, rattan/bamboo])
- Transient or mobile camps associated with commercial projects (road/pipeline construction, large-scale logging).

There are several factors that influence the level of risk for each of these groups, such as: degree of endemicity, access to high quality care in a timely manner, strength of the healthcare system, etc. However, the key limiting factor to access health services focused on malaria diagnosis and treatment is poverty. Marginalized mobile and migrant populations and ethnic minority groups working and/or living in the forest often carry the greatest burden of both poverty and disease.

Therefore, targeted malaria control interventions, catered to the needs of these populations at risk, are critical for reaching the goal of malaria elimination. Each situation requires different malaria control strategies, adapted to suit the specific at-risk groups and vector behaviors, and adjusted to take into consideration local infrastructure and health service coverage.

## 1.3.2 Drug Resistance

Delayed parasite clearance after treatment with DHA-PIP<sup>1</sup> was first detected in Viet Nam in Binh Phuoc Province in 2009. Routine monitoring of treatment with DHA-PIP also detected other foci of delayed parasite clearance in Gia Lai (2010), Dak Nong (2011), Quang Nam (2012), and Kon Tum and Khanh Hoa Provinces (2014). Therapeutic efficacy studies of DHA-PIP conducted in Binh Phuoc, Dac Lak, Khanh Hoa and Kon Tum Provinces in 2013-2014 did not identify any treatment failures despite a Day 3 positivity rate of up to 36% (Binh Phuoc), but a study in Binh Phuoc in 2015-2016 revealed late treatment failure rates of 35%. Eliminating these resistant strains and preventing their spread are key areas of focus for the malaria programme. As a result, the government of Viet Nam, the Ministry of

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<sup>1</sup> DHA-PIP – Dihydroartemisinin-piperaquine.

Health, and the National Institute of Malariology, Parasitology, and Entomology (NIMPE) have all committed to the goal of elimination of all types of malaria by 2030, as this is likely to be the only method to halt the spread of multi-drug resistance and prevent the establishment of untreatable *P. falciparum* malaria. In 2019, the Ministry of Health has taken steps to change the first-line treatment from DHA-PIP to artesunate-pyronaridine (Pyramax) in affected provinces to mitigate the spread of resistant parasites. It remains to be seen whether this new drug will curb the spread of drug resistant malaria.

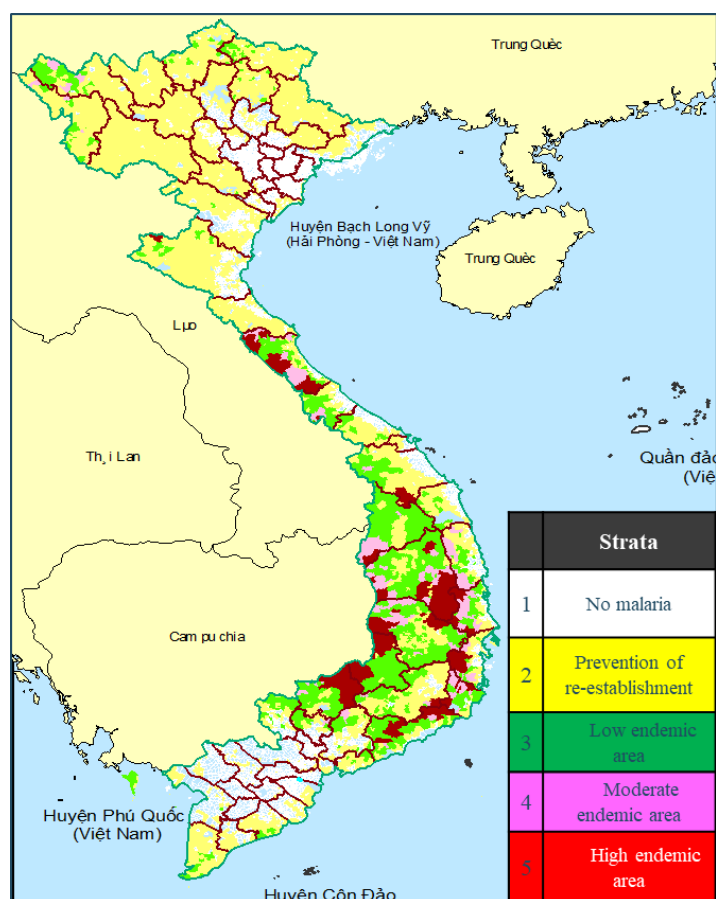
#### **1.4 Malaria Stratification**

According to the National Strategy for Malaria Control and Elimination (2011-2020 and orientation towards 2030), stratification of malaria risk is carried out every five years. It is conducted at the commune level (covering all 11,160 communes), assigning each to one of the five designated strata (Strata 1-5). These strata are defined by malaria endemicity and range from areas without malaria transmission (Strata 1), areas at risk of malaria re-introduction (Strata 2), low (Strata 3), moderate (Strata 4), and high endemic areas (Strata 5). The stratification is based on a weighted methodology mainly taking into account the average number of confirmed and reported malaria cases in 5 consecutive years per 1000 population per commune. A secondary weighted value is the presence of at least one of the three main vectors (*An. minimus*, *An. dirus*, *An. epiroticus*). Additional factors considered in the stratification include presence of drug resistant malaria parasites, presence of insecticide resistant vectors, communes that include disadvantaged, border, or remote populations, weak functioning health services network, and measures of population movement.

Latest stratification exercise took place in 2019 and identified a total of 1030 communes that are malaria endemic (strata 3-5) with an approximate population at risk of 6.9 million. Compared to the previous stratification in 2014, the total number of at-risk communes (Strata 3-5) reduced by 45% from 1,864 to 1,030 communes. This updated stratification forms the basis for the targeted malaria elimination strategy set for in this plan.

#### **Stratification of Viet Nam 2019**





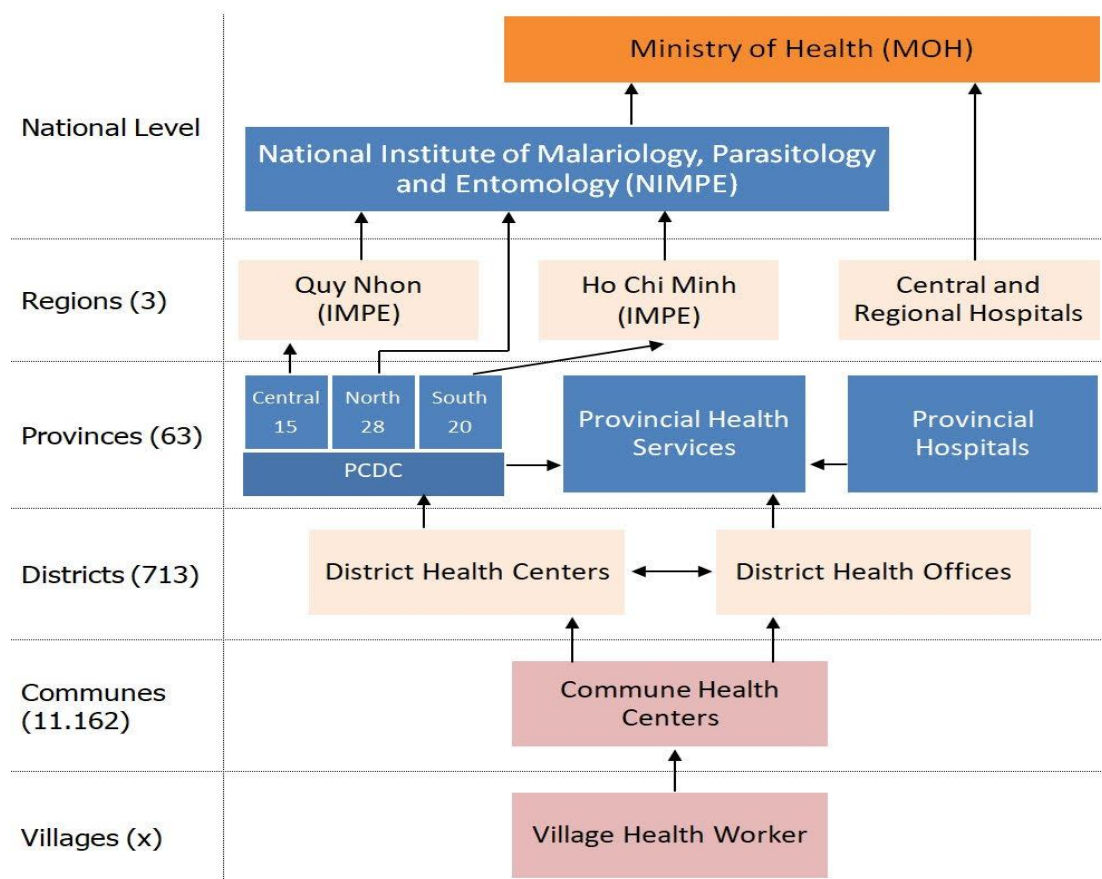
## 1.5 Health Systems and Community Systems Context

Viet Nam has a well-established public healthcare network. The public system is organized hierarchically on four administrative levels that provide access to care for all: national (Ministry of Health), provincial (Department of Health), district (Health Centers) and commune (Commune Health Station (CHS)). There are central-level providers directly managed by the Ministry of Health and providers at the provincial, district, and commune levels, while an extensive network of village health workers represent the backbone of the community level health response in Viet Nam. At each level, there is a two-track system. One focuses on prevention, which includes the public health system and the other is devoted to clinical acute care (hospitals). These two tracks are distinct and different systems, but they usually collaborate closely.

The healthcare system has a mixture of public and private providers. Private hospitals now provide more than 60% of outpatient services and have become an important component of the national health system [1].

A health insurance system was introduced in 1993, and the government has made a considerable effort to achieve universal coverage, reaching 77% of the population in 2015 [2], aiming to reach a target of 90% health insurance coverage by the end of 2020.

### Health System Structure in Viet Nam



## 1.6 Health System Oversight in Relation to Malaria

Malaria is managed in Viet Nam through three regional designations. Each of these regional designations correspond to a central-level institution that oversees parasitology and entomology work as well as all malaria activities in their region. The National Institute of Malaria, Parasitology and Entomology (NIMPE) is responsible for malaria activities in the 28 northernmost provinces in the country as well as coordinating nationwide malaria efforts. Regional Institutes of Malaria, Parasitology, and Entomology (IMPE) in Quy Nhon is responsible for malaria activities in the 15 central and highlands provinces while IMPE Ho Chi Minh is responsible for malaria activities in the 20 southernmost provinces. NIMPE and the two regional IMPEs have malaria-specific technical departments for research and epidemiology; other departments that include malaria within their remit include the entomology, training, planning, and international cooperation. These departments have more specialized groups (e.g., statistics under malaria epidemiology).

All 63 provinces historically have had a Provincial Center for Preventive Medicine responsible for management and coordination of preventive health work; about a third of provinces also had a Malaria Control Center (MCC) with the same general scope of work but specific to malaria. However, since 2017-2018, Viet Nam began to consolidate these centers into provincial Communicable Disease Centers (CDCs).

Provinces are sub-divided into 713 districts; the same responsibilities expected at the provincial level are at the district level regarding management, coordination, and preventive work. These prevention-oriented units are being merged into district-level treatment facilities, now called district health centers (DHCs). Each DHC has a malaria focal point responsible for overseeing malaria work for the communes in that district. Each district has about 10-15 communes, for a total of 11,160 communes.

Diagnosis and treatment of malaria are available down to the commune health center (CHC) level. In other words, CHCs, DHCs, and hospitals at the provincial and national level all can provide diagnosis and treatment services.

Village Health Workers (VHWs) are the backbone of the community-level health response in Viet Nam. These VHWs are members of the community who receive training from the provincial health service, often at the district level, to cope with the most common medical needs of the population of the village. VHWs are not full-time employed government officials but do receive an allowance from the government budget for the times they are engaged in outreach activities, mainly focused on health promotion and prevention.

The NMCP recognizes the important role that the private sector plays in the efforts to eliminate malaria. It also recognizes that it has limited experience in dealing with private sector related issues. In order to address this problem, NIMPE therefore recently expanded engagement with civil society organizations (CSOs) working in this space..

## **1.7 Human Resources for Health**

The health workforce – doctors, nurses, midwives and pharmacists, among others – is critical to delivering quality health services. In 2016, Viet Nam had an estimated 0.8 physicians per 1000 population, 1.4 nurses per 1000 population, and 0.3 pharmaceutical personnel per 1000 population, which is quite low when compared to other countries in South East Asia (WHO).

Recruitment of human resources is done based on the HRH needs submitted yearly by each health facility. Once the recruitment needs are submitted the Department of Health at the provincial level aggregates HRH needs and proposes a recruitment plan to Department of Home Affairs, who in turn reports to the Provincial People's Committee (PPC). The PPC decides the recruitment quota for each sector. Based on the approved quota, the Department of Health then organizes recruitment.

While Viet Nam has a large number of health workers, their skill levels, distribution, management, high turnover and financing are major constraints upon improving health services and outcomes. Medical specialists, nurses, college-trained pharmacists, public health workers, and specialist managers are poorly distributed, which results in an imbalanced access to high quality care.

## II. EVALUATION OF MALARIA CONTROL AND ELIMINATION IN THE PERIOD OF 2015 – 2019

### 2.1 Results of the implementation of malaria control and elimination in the period of 2015 – 2019

#### 2.1.1 Malaria control and elimination indicators:

In the past years, under the attention, leadership and investment of the government and international organizations, along with the efforts of the whole health system from central to local levels, we have achieved remarkable results in malaria control and elimination as the rate of malaria morbidity and mortality has continued to decline every year. Up to 2018, malaria morbidity rate per 1000 population decreased by 84% in comparison with 2015 (0,08/0,52), the number of malaria deaths decreased by 33,3% in comparison with 2015 (1/3 cases).

**Table 1: Malaria report by year, period 2015 - 2019**

No	Indicators	2015	2016	2017	2018	2019
1	Number of malaria deaths	3	3	6	1	0
2	Rate of malaria death per 100,000 population	0.003	0.003	0.006	0.0011	0
3	Number of severe malaria cases	60	26	37	12	12
4	Number of confirmed cases	9,331	4,161	4,548	4,813	4665
5	Rate of confirmed cases per 1,000 population	0.10	0.04	0.04	0.052	0.048
6	Number of malaria outbreaks	0	0	0	0	0

Up to the end of 2018, all malaria control and elimination targets have been met in the period 2016 – 2020 following the Decision No. 1125/QĐ-Ttg dated 31 July 2017 by the Prime Minister.

No	Target	Target for 2020 (Decision 1125)	Results up to end of 2019
1	Decrease malaria morbidity rate /1,000 general population	≤ 0.19	0.07
2	Control the malaria death rate/100,000 general population	≤ 0.02	0.001

#### 2.1.2 Results of malaria epidemiological stratification in 2019

- Non malaria endemic areas: 63,207,260
- Potential re-establishment of transmission areas: 25,805,648
- Low malaria endemic areas: 5,328,878
- Moderate malaria endemic areas: 666,410
- High malaria endemic areas: 887,834

### **2.1.3 Progress on drug resistance**

*Plasmodium falciparum* resistance to artemisinins has been detected in Quang Nam, Khanh Hoa, Gia Lai, Dak Lak, Dak Nong and Binh Phuoc provinces. There is a risk that drug resistance to artemisinin and their partner drugs may expand to other provinces. Many studies on management of the drug resistance have been implemented, along with activities to prevent the increase and expansion of resistant malaria parasites.

### **2.1.4 Malaria transmitting mosquito distribution and the situation of chemical resistant mosquitoes**

Malaria transmission mosquitoes are available in many areas of Viet Nam. *An. minimus* mosquitoes are widely distributed and can trigger outbreaks in receptive areas if confirmed malaria case(s) are mobile and reintroducing the parasites in these areas. *An. dirus* mosquitoes are mainly distributed in the Central – Highland region while *An. epiroticus* mosquitoes are mainly distributed in the Southern region.

*An. minimus* and *An. dirus* malaria transmitting mosquitoes often rest and bite people outdoor, therefore, while IRS and ITNs can help controlling the vector, they are not achieving their highest possible impact. *An. epiroticus* – the main malaria transmitting mosquitoes of the Southern region – has been detected to be resistant to Pyrethroid chemicals.

### **2.1.5 Situation of mobile and migrant populations, cross-border populations and malaria transmission**

Seasonal mobile and migrant populations among local areas, travelling from malaria free areas to malaria endemic areas in order to earn money, have increased the risk of malaria morbidity and transmission. People travelling to high malaria endemic and drug resistant areas such as Laos, Cambodia and African countries will also increase the risk of reintroduction and drug resistance.

Forest goers usually are farming and staying outside overnight without using bednets and personal protection which puts them at higher risk of malaria infection.

## **2.2 Malaria control and elimination system**

Central level: Ministry of Health, Department of Preventive Medicine, the National Institute of Malariology, Parasitology and Entomology (NIMPE), Institute of Malariology, Parasitology and Entomology Quy Nhon (IMPE Quy Nhon), and Institute of Malariology, Parasitology and Entomology (IMPE HCM).

Local level: malaria control and elimination system has been changing during the past years. Several units were merged to establish the Centers for Disease Control and Prevention in many provinces. Malaria control and elimination activities in local areas are implemented by Malaria Preventive Centers, Centers for Preventive Medicine, Centers for Disease Control and Prevention, Provincial hospitals, Health centers, District hospitals, commune health centers; and village health workers.

In addition, Ministry health sectors implement malaria control and elimination activities for their staff: National defense, Police, Transportation, Construction, Agriculture and Rural development, and Environmental Resources.

## **2.3 Key malaria control and elimination implementation**

### **2.3.1 Direction and Management**

The Ministry of Health has been mandated to implement the approved action plan of the period 2015 – 2020 following the Decision number 4717/QĐ-BYT dated 11 November 2014 by Minister of Health.

The Ministry of Health issued direction documents, management guidelines, developed programs and action plans for malaria control and elimination at all levels, developed epidemiological malaria stratification plan, drug resistance control and prevention and projects for malaria control and elimination in malaria hotspots such as: Decision number 741/QĐ-BYT dated 2 Mar 2016 by Minister of Health on guidelines on malaria surveillance and prevention; Decision number 4845/QĐ-BYT dated 8 Sep 2016 by Minister of Health on guidelines on malaria diagnosis and treatment; Decision number 08/QĐ-BYT dated 4 Jan 2017 by Minister of Health approved the roadmap of malaria elimination in Viet Nam toward 2025 and orientation to 2030.

Departments of the Ministry of Health have advised Minister of Health on mandating malaria control and elimination activities, coordinated with other Institutes of Malariology, Parasitology and Entomology and other relevant units to implement malaria control and elimination activities.

Malaria Control and Elimination Project Steering Committee has issued many documents and guidelines on techniques to meet the actual needs of malaria control and elimination activities in current period.

The Institutes of Malariology, Parasitology and Entomology have strengthened the implementation of malaria control and elimination activities, and continued to monitor the malaria situation in their respective areas along with providing technical assistance for all levels.

Provincial Department of Health, Centers for Preventive Medicine, Centers for Malaria Control, Centers for Disease Control and Prevention in provinces/cities managed to implement malaria control and elimination activities in their areas.

### **2.3.2 Technical activities**

Access and coverage of active microscopy posts in communes located in the malaria endemic areas will be ensured by routinely training health workers and village health workers on surveillance and laboratory diagnosis to provide quality case management in high risk malaria areas, to MMPs, farming people and cross-border populations. In addition, surveillance activities of malaria transmission mosquito vectors in focus areas and of malaria drug resistant areas will continue to be intensified. Malaria screening with microscopes and rapid diagnostic tests (RDTs) in hotspot areas is organized. The malaria program maintained approximately 2,846 microscopy posts for testing, ensured sufficient supply of malaria medicines nationwide (including laboratory chemicals and equipment for 1.7 million blood slides annually) and procured IRS and LLIN chemicals annually for 1,972,000 people living in moderate and high malaria endemic areas.

Monitoring activities of malaria epidemiological situation nationwide to ensure early malaria detection and treatment according to MoH guidelines was conducted regularly. Malaria control and elimination activities at all levels of care have been implemented, while malaria cases/ malaria foci have been investigated and classified.

Interventions in malaria hotspots areas have been intensified to investigate potential malaria outbreak areas in timely manner.

Local authorities regularly organized campaigns to reduce the population of vector prior to high-peaked season by conducting spraying of insecticide and providing LLINs and ITNs to forest goers in malaria hotspots. Every year, there are approximately 2 to 3 million people in malaria endemic areas being protected by insecticides-based interventions. The program regularly conducted susceptibility bioassay of mosquitoes to assess their resistance to current insecticides in order to properly adjust the interventions and ensure the effectiveness of vector control interventions.

The program provided training on malaria control and elimination to provincial/ district/ commune staff and trained staff on malaria diagnosis and treatment. In addition, it instructed provinces about malaria elimination criteria and subnational malaria verification of elimination and certification procedures according to the roadmap approved by Ministry of Health.

IEC/BCC intervention on malaria control and elimination were widely disseminated, such as messages about malaria prevention through mass media, including messages regarding the importance of sleeping under bednets, of using the right regimen for malaria treatment and of implementing and adopting the right measures to prevent and protect all communities. The program organized the “World Malaria Day” every 25 April to raise awareness at the community level and ensure that the population is actively participating in malaria control and elimination.

Interagency collaboration involved all sectors, organizations, communities and private sector in malaria control and elimination. The Ministry of Health coordinated with Ministry of Police, Ministry of Defense, Ministry of Construction, Border Securities, Ministry of Communications and Transport, Ministry of Natural Resources and Environment, and Ministry of Agriculture and Rural Development to implement malaria control and elimination activities.

Scientific Research was carried out, mainly studies on drug resistance of malaria parasites, anti-malarial drug resistance measures, chemical resistant mosquitoes, malaria control measures suitable for specific subjects such as mobile people, seasonal workers, farming people, cross-border travelers. In addition, studies on application and evaluation of the malaria control and elimination program were conducted.

International collaboration saw effective cooperation with development partners (Global Fund, World Health Organization, United States, Belgium, Australia, Asian Development Bank, etc.) to support malaria control and elimination activities.

## **2.4 Investment in malaria control and elimination activities in period 2015 – 2019**

Over the past years, funding for malaria control has been funded from various sources, including:

- Governmental budget: annually allocated through the national Health – Population Target Program.
- International funding: Global Fund for HIV/AIDS, Tuberculosis and Malaria is a major funding source. USAID through the President’s Malaria Initiative and the Bill & Melinda Gates Foundation also contribute to the malaria elimination efforts in Viet Nam.

- The World Health Organization (WHO) and other international organizations provide technical assistance to implement and monitor malaria control and elimination activities.
- Local budget: allocated by Decision number 1125/QĐ-TTg dated 31 July 2017 by Prime Minister.

Budget allocation for malaria control and elimination from 2015 – 2019 is as follows (Unit: million VND)

<b>Year</b>	<b>Governmental budget</b>	<b>Global Fund</b>	<b>Funding from WHO and other NGOs</b>	<b>Total</b>
2015	60,000	112,278	18,000	190,278
2016	17,468	244,341	25,400	287,209
2017	67,100	206,523	17,000	290,623
2018	42,000	275,776	21,000	296,776
2019	37,265	231,463	20,000	251,463
Total	223,833	1,070,381	101,400	1,316,349

## **2.5 Opportunities and challenges of malaria control & elimination activities in period 2015 – 2019**

### **2.5.1 Opportunities**

Malaria control project belongs to the National Health – Population Target Program in period 2016 – 2020, which is supported by the government, Ministry of Health.

Malaria hotspots have been identified in order to target resources properly particularly for the Central – Highland region which has the highest burden of malaria, remote and hard-to-reach areas, and substantial number of economic construction projects. Progress is being made to ensure sustainability of malaria elimination and to avoid the re-establishment of malaria.

On the basis of funding for the malaria program from the government, the National Malaria Control Program is strongly supported by international organizations to implement malaria control activities in order to achieve set annual goals. International cooperative projects, especially Global Fund for HIV/AIDS, Tuberculosis and Malaria and the World Health Organization have continuously sponsored and supported malaria control activities in Viet Nam.

### **2.5.2 Challenges**

The National Health Population Target Program of period 2016 – 2020 was approved late by the government (31 July 2017). Technical activities are delayed as they are supported by local budgets that do not arrive on time. In addition, at times provincial authorities do not allocate enough budget for activities, which results in poor quality or delayed implementation of malaria control activities in some local areas of concern.



Decision number 1125/QĐ-TTg dated 31 July 2017 by Prime Minister aimed to provide a central budget allocation for malaria medicines, chemicals and supplies. However, the domestic budget for malaria control and elimination was not fully disbursed and some activities (epidemiological surveillance, training, etc.) were not conducted as they were planned.

The 2016 budget could only cover the procurement of anti-malarial drugs. There was no budget for IRS insecticides, repellents, reagents, and other supplies needed for malaria diagnosis. The 2017 budget was also disbursed late (December 2017) which resulted in limited implementation of core interventions during the first two years of period 2016 – 2020. This resulted in insufficient insecticides and supplies.

Offices and facilities at provinces and districts levels have been merged, which led to staff reorganization. This resulted in a shortage of malaria staff at lower levels and impacted the implementation of malaria control and elimination activities.

The number of populations living in malaria endemic areas is still high, most of them coming from ethnic minorities, living in the mountainous, remote and disadvantaged areas, in the Central highlands areas, north-west and border areas. Seasonal workers do not actively participate in malaria prevention activities such as increasing awareness of populations at risk regarding sleeping under an insecticide-treated bed net or to adhere to the full course of ACT. In addition, these populations are unfortunately difficult to be reached for IRS interventions.

Local authorities in some areas do not push the malaria elimination agenda and do not dedicate the time to conduct properly malaria control and elimination activities. More political awareness and stronger dedication for malaria elimination is needed.

Surveillance and case management for mobile and migrant populations is still a big challenge for the current malaria control and elimination measures, especially when it comes to reaching the seasonal workers travelling from moderate and high malaria endemic areas to malaria free and low endemic areas, causing potential risk of malaria outbreaks and reintroduction.

The number of village health workers has been increased over the years, but their technical skills need to be strengthened. Due to policy constraints, village health workers are not allowed to conduct malaria diagnosis and treatment. However, there are some exceptions in the higher burden provinces.

Artemisinin/ACT resistant *P. falciparum* parasites can spread due to population mobility among endemic areas.

Climate change, increasing land use, and deforestation are known determinants affecting the malaria epidemiology and vector behavior. Malaria vectors have changed their habits and behaviors, especially in the areas where mosquitoes have become insecticide resistant. This is a new challenge for the malaria elimination and control efforts.

### **III. ACTION PLAN FOR PERIOD 2021 – 2025**

#### **3.1 Legal basis**

Decision No. 1920 / QD-TTg dated October 27, 2011 signed by the Prime Minister on approving the National Strategy for malaria prevention and elimination in Viet Nam in the 2011-2020 period and orientations to 2030 .

Resolution No. 20 / NQ-TW of 2017 on reinforcing people’s health protection, care and improvement in new situation.

Decision 1624 / QD-BYT dated 6 March 2018 on the Action Program to implement Resolution No. 20 / NQ-TW.

Pursuant to the Decision No. 1125 / QD-TTg dated July 31, 2017 signed by the Prime Minister approving the Health - Population Target Program for the period 2016 - 2020;

Decision No. 4717 / QD-BYT dated 11/11/2014 signed by the Minister of Health on issuing the Action Plan for malaria prevention for period 2015 - 2020.

Decision No. 741 / QD-BYT dated March 2, 2016 signed by the Minister of Health on issuing the Guidelines for malaria surveillance and prevention.

Decision No. 4845 / QD-BYT dated September 8, 2016 signed by the Minister of Health on issuing the Guidelines for malaria diagnosis and treatment.

Decision No. 08 / QD-BYT dated January 4, 2017 signed by the Minister of Health approving the roadmap for malaria elimination in Viet Nam by 2025 and orientation towards 2030.

Circular No. 26/2018 / TT-BTC dated 21 March 2018 of the Ministry of Finance regulating the management and use of non-business expenditure for the implementation of the Health - Population Target Program for the 2016-2020 period.

Guideline on implementing of malaria elimination in Viet Nam to 2025 and orientation to 2030.

Global technical strategy of the World Health Organization on malaria in the period 2016 - 2030.

Strategy for malaria elimination in the Greater Mekong Sub-region 2015 – 2030

#### **3.2 Goal**

##### **3.2.1 Overall Goals by 2023 and 2025**

The malaria program will continue to accelerate towards malaria elimination and intensify interventions in high endemic areas, especially areas with drug resistance and high-risk populations. They will pursue malaria elimination status for the current malaria endemic provinces and strengthen the systems to ensure sustainable elimination and prevent re-establishment of malaria.

The malaria program is committed to eliminate locally-acquired *P. falciparum* by 2023. This will require intensification of current interventions and addition of new activities (e.g., proactive case detection strategies such as focal screening and treatment (FSAT), etc.).

By 2025, the country is aiming to reach the following goals:

- To reduce malaria morbidity rate to below 0.015/1,000 population

- To reduce malaria mortality to below 0.002/100,000 population
- To ensure that 55 provinces be recognized as having eliminated malaria
- To ensure no malaria outbreaks

### **3.2.2 Specific objectives and targets**

#### **1) Ensure that all people have better access to early diagnosis, prompt and effective treatment of malaria at the public and private health facilities**

Target 1.1: 100% of malaria suspected cases that come to health facilities will be tested for malaria parasites within 2 hours.

Target 1.2: 100% of confirmed cases will be treated with high effective antimalarial drug combination therapy (ACT) in accordance with MOH guideline.

#### **2) Ensure appropriate malaria vector control interventions coverage**

Target 2.1: >98% of households in high and moderate malaria endemic areas have enough ITNs/LLINs (average 1.8 persons/1 duo-bednets).

Target 2.2: >95% of households in endemic area received IRS.

Target 2.3: >90% of population at high risk of malaria (working and staying overnight in the forest) apply malaria control measures (ITNs/LLINs and other personal protection measures)

#### **3) Improve the malaria epidemiological surveillance system and ensure appropriate capacity to malaria epidemic response**

Target 3.1: 100% cases will be reported in a complete and timely manner as per national guidelines.

Target 3.2: 100% case will be investigated and classified as per national guidelines.

Target 3.3: 100% of malaria foci will be responded with targeted and effective interventions within 7 days from the first detected confirmed case.

#### **4) Improve knowledge and behavior change of population to actively protect themselves from malaria risks**

Target 4.1: >95% of population slept under an insecticide-treated net the previous night and >95% of households have at least one insecticide-treated net for every two people and/or sprayed by IRS within the last 12 months.

Target 4.2: >95% of population in the malaria endemic areas can recall at least 4 key messages on malaria control and elimination (malaria is transmitted by mosquitoes, sleep under bednets and spray insecticidal chemicals to prevent malaria, visit health facilities for treatment when getting high fever, adhere to treatment prescribed).

#### **5) Provide effective management and coordination of the national malaria control and elimination effort**

Target 5.1: By 2023, no local *P. falciparum* case.

Target 5.2: Ensure no malaria re-introduction in certified malaria-free provinces.

Target 5.3: 55 provinces to be certified as malaria free by 2025.

### **3.3 Solutions**

*Reinforce political commitment, management, and leadership.* Lead the implementation of the operational plan for the "National malaria control and elimination strategy for the 2011-2020 period and orientations towards 2030", issued by the Prime Minister under Decision No. 1920 / QD-TTg October 27, 2011 and the plan for malaria prevention and elimination in the 2021-2025 period.

*Policy and Guidelines.* Continue to improve, supplement and disseminate official documents and guidelines on malaria prevention and elimination. Review and strengthen malaria prevention and elimination programs and support detailed planning for implementation at all levels, conduct routinely malaria stratification, prevent expansion of drug resistance and design malaria prevention initiative tailored to key areas.

*Intensify implementation.* Institutes of Malariology - Parasitology - Entomology will lead and plan the implementation of interventions to prevent and eliminate malaria. They oversee the implementation of malaria surveillance, including drug-resistance monitoring and entomological surveillance. Support and implement new innovations at all levels, conduct operational research and apply learning in malaria prevention and elimination program. Implement the Ministry of Health's regulations, procedures and technical guidance on malaria prevention and elimination for all levels.

*Oversight.* People's Committees of provinces and cities will continue to monitor, review, fund and approve annual workplans for malaria prevention at provincial, district and commune levels to reach the targets of the roadmap for malaria elimination approved by the Ministry of Health.

*Private sector engagement.* Mobilize private health facilities to participate in malaria prevention and elimination activities, control the sale of anti-malarial drugs at community level and in private health facilities to limit the sale of substandard and falsified drugs.

#### **3.3.1 Strengthen health information, education and communication**

Promote dissemination of health education messages on malaria prevention and elimination by appropriate means, especially through direct health education and communication targeting at-risk people in endemic areas.

Mobilize leaders of departments, branches and unions to participate in the planning, funding and implementation of malaria prevention and elimination activities.

Mobilize people to actively participate in malaria prevention and elimination activities. Disseminate malaria prevention and elimination information through the schools.

Provide communication materials on malaria prevention and elimination to key audience.

#### **3.3.2 Technical solutions**

##### **a) Technical solutions for vector control**

Use highly effective insecticides (IRS, ITNs, LLINs). Use effective interventions to kill vectors in high burden areas which have malaria morbidity rate decreasing slowly and that are prone to outbreaks.

Provide mosquito nets, LLINs, mosquito repellents to at-risk population in malaria endemic areas, especially to forest workers.

Integrate interventions aiming at preventing malaria transmission with other vector-borne disease interventions, such as dengue.

In areas where malaria elimination is the goal, the main vector control intervention is conducting IRS in the identified active foci to interrupt malaria transmission.

b) Solutions to improve the effectiveness of detection, diagnosis and treatment

Improve capacity to diagnose and treat malaria in hospitals and health facilities, through early detection of infection and timely treatment to ultimately reduce malaria mortality.

Ensure guidelines for malaria diagnosis and treatment are consistent, implemented nationwide, and updated regularly as per the latest guidance from the World Health Organization and research findings on drug resistance in malaria endemic areas.

Maintain quality microscopy posts at communes and inter-commune levels in order to detect cases early and provide prompt treatment, as per national guidelines. In high burden malaria communes, remote areas, areas without microscopy posts and mountainous villages far from commune health stations, RDTs will be the main detection method.

Expand proactive case detection strategies (e.g., Malaria Outreach Teams) to detect malaria cases in remote/forest areas.

Ensure adequate supply of highly effective malaria drugs at all levels, no stock-outs in health facilities. Drug manufacturers can be local or international.

Focus on the prevention of *P. falciparum* resistant to artemisinin and its derivatives in provinces where resistance has been determined. Work with pharmaceutical departments to facilitate the process of introducing new drugs into the country, such as Tafenoquine.

Rapidly change policy and use new malaria treatment drugs when and where required due to evidence of resistance.

If Tafenoquine will prove to be a safe and effective anti-malaria drug for the treatment of *P. vivax* in Viet Nam, the screening for glucose-6-phosphatase deficiency (G6PD) using quantitative tests before treating patients infected with *P. vivax* will be required.

In areas where malaria elimination is implemented, closely manage and follow up all malaria patients to ensure cure.

Conduct active case detection in case of importation of malaria parasites in receptive areas. Detect cases early and provide prompt treatment for all suspected malaria cases. Strengthen surveillance and case management in hospitals and in the community, monitor the effectiveness of treatment including chemoprophylaxis treatment and treatment against malaria relapse, prevent local transmission.

### **3.3.3 Solutions for testing, monitoring and evaluating malaria control and elimination program**

Improve the capacity of staff to implement strong monitoring and evaluation programs from central to the community level. Develop guidance and processes for monitoring, evaluating programs at all levels, and continue to train staff on monitoring and evaluation procedures at all levels.

Annually and every 5 years, review the program's effectiveness, draw lessons learned, and set up goals and plans for the next year according to actual situation.

### **3.3.4 Strengthening resources and investment**

Increase investment in facilities, human resources and equipment for malaria prevention and elimination, especially the training of specialized staff and training of key responsible staff on program management and implementation. Focus should be made on strengthening capacity of the commune staff and village health workers.

Continue to invest in malaria prevention, control and elimination according to the budgets of the State Budget Law, and as per the socio-economic development levels and conditions in each period.

Provinces to proactively develop plans and allocate annual funds under the guidance of the Health and Population Target Program for the period 2021 - 2025, meeting the funding needs for prevention and elimination at each location.

Increase investment in facilities, human resources and equipment for localities and specialized institutes.

Actively mobilize international aid for malaria prevention and elimination through developing action programs and projects to prevent and eliminate malaria in each period. Use the funding sources for right purposes with high efficiency.

Effectively manage and coordinate financial resources, ensuring priority for budget investment in key malaria areas: Central, Central Highlands, Southeast and bordering provinces, key economic-defense provinces, malaria endemic areas. Strengthen supervision, monitoring and evaluation of budget utilization efficiency.

### **3.3.5 Cooperation and community mobilization**

Coordinate with the People's Committees at all levels, inter-agencies, and local communities to implement malaria prevention and elimination interventions.

Disseminate widely the agenda of malaria prevention and elimination, mobilize other departments, agencies, organizations, communities, private health sector and individuals in supporting the malaria prevention and elimination efforts.

Increase the community active participation in implementing malaria prevention and elimination activities, including regular bed net usage, good health seeking behavior when having fever, sanitation, etc.

Identify and implement appropriate activities for private health sector to participate in the detection and treatment of malaria at the community level (e.g., distribute RDTs to the private health sector for free testing, disseminate malaria education message in the community, require private health sector to report monthly malaria data, etc.).

Local specialized agencies shall notify production and business enterprises, construction units, agriculture units, forestry farms and factories located in the area to actively implement malaria prevention and control interventions for their employees.

### **3.3.6 Solutions for scientific research**

Identify research priorities for basic operational research, applied research, and evaluation studies for malaria prevention and control program.

Prioritize the research aiming at better understanding the mechanism of drug resistance of malaria strains and finding interventions to more effectively prevent drug-resistant malaria, insecticide-resistant mosquitoes, preventing and curing malaria among mobile people with seasonal activities and people working in the fields, across the border and in the forest.

Study the effectiveness and safety of new malaria drugs to treat malaria. Research and regularly assess drug-resistant malaria parasites in the field and in the laboratory.

Research and apply appropriate and effective measures to prevent transmission of malaria, especially in areas of high-prevalence of malaria, areas where malaria decline is slow/stagnating, and areas where vectors are resistant to the insecticides.

Foster activities related to sharing of knowledge, learning about new technology or innovation, exchanging and expert training between domestic and foreign research institutions.

Periodically organize scientific conferences to exchange experiences, print, publish journals, publish research results, apply research results to malaria prevention practice.

### **3.4 Main activities**

#### **3.4.1 Ensure that all people have better access to early diagnosis, prompt and effective treatment of malaria at the public and private health facilities**

##### ***3.4.1.1 Increase access to and utilization of quality malaria diagnostic services at provincial, district, and commune-level public health facilities***

Conduct nation-wide diagnostic service assessment for microscopy and RDTs in public sector: update the questionnaires and web-based survey; conduct survey, assess diagnosis quality through microscopes, RDTs. Propose interventions to strengthen diagnosis quality.

Provide microscopes and consumables for commune health centers, commune clinics, provincial and district health facilities, as required. For Strata 1 and 2, procure microscopes and consumables to maintain microscopy points at district level, and procure needles and slides for commune levels; maintain syringes and slides at commune level. For Strata 3, 4 and 5, procure microscopes and consumables to maintain microscopy points at commune level. Conduct routine maintenance of the microscopes.

Provide annual refresher trainings for microscopists, including on RDTs diagnosis.

Provide diagnosis service using RDTs to health facilities at provincial, district, commune levels and private health facilities (e.g., RDTs to be provided to all communes in Strata 4 and 5; to remote communes in Strata 3).

Screen all suspected malaria cases by either microscopy or RDTs.

#### **3.4.1.2 *Strengthen quality assurance and control systems for malaria diagnosis***

Update and disseminate national microscopy and RDT quality assurance guidelines (SOPs, QA/QC, monitoring, reporting forms related to diagnosis services).

Maintain microscopy slide bank at central and regional level for microscopy reference and training purposes: provide microscopes and consumables, collect slides with parasites, select and finalize reference slides.

Conduct routine supervision visits to monitor, assess competency of provincial, district, and commune-level microscopists, and improve healthcare worker performance of malaria diagnostic testing.

Evaluate and routinely improve skills of NIMPE and IMPEs senior microscopists: collaborate with WHO to conduct External Competency Assessment (ECA) for NIMPE, IMPEs microscopists by the regional WHO competency assessment.

Utilize PCR/LAMP-based diagnostic for quality assurance of microscopy and RDT results at central and provincial levels, detect malaria cases that cannot be detected by microscopes. Examine slides qualified for slide bank: provide trainings on SOPs of PCR for NIMPE/IMPEs staff, procure consumables in laboratory, provide trainings for provincial, district and commune on collecting samples with filter paper; transport samples to lab, test the blood samples by PCR.

Strengthen reference laboratories at NIMPE and IMPEs to obtain WHO pre-qualification: invite international experts to conduct pre-qualification assessment of NIMPE malariology laboratory; make improvements based on the feedback from international experts; conduct laboratory assessment and pre-qualification by WHO.

#### **3.4.1.3 *Provide prompt access to quality, efficacious antimalarial medications at all public health facilities and other qualified points of care***

Review and update diagnosis and treatment guidelines: technical working group to update diagnosis and treatment guidelines and to conduct meeting to obtain consensus; host workshop with NIMPE, IMPEs, hospitals, and other stakeholders to present the updated draft of the diagnosis and treatment guidelines; conduct consensus meeting with scientific committee at MOH and submit revised diagnosis and treatment guidelines to the MOH for approval; print and distribute the new diagnosis and treatment guidelines to health facilities.

Conduct research on effective malaria treatment regimen.

Procure and distribute all antimalarial drugs to all health facilities.

Provide safe radical care for *P. vivax* cases: procure and provide quantitative/qualitative G6PD RDTs to province/district/commune health facilities in zone 4 and 5; test all P.v/P.o cases with G6PD following national treatment guideline; treatment follow-up and monitoring following national treatment guideline.



Monitor quality of antimalarial drugs: procure drug quality test kits (Minilab) as required; review and update standard operating procedures for antimalarial drug quality monitoring; train staff at central/regional levels on antimalarial quality monitoring; collect drug samples at different sites (private sector and public sector) by regional and provincial team; test samples using Minilab and send suspected samples to the National Institute of Drug Quality Control for testing.

Routinely monitor therapeutic efficacy and resistance for *P. falciparum* and *P. vivax*: develop study proposals; train staff; conduct therapeutic efficacy study activities at sentinel sites; conduct monitoring visits at sentinel sites.

Identify the prevalence of resistance markers using the latest molecular techniques: provide trainings, collect samples, preserve and transport samples; establish and maintain a genotyping isolate bank; conduct genotyping of *P. falciparum* by PCR or latest technology.

Conduct research studies on new treatment therapies and/or new drugs: research team to develop research plan and tools; collect, enter, clean and analyze data; disseminate research results.

Strengthen the pharmacovigilance system in collaboration with MoH: update the guideline to monitor adverse drug reaction (ADR) of antimalarial drugs; conduct training on the pharmacovigilance system to all provinces; monitor antimalarial side effects and enter into database.

#### **3.4.1.4 *Increase quality of malaria case management services provided by healthcare workers in public sector health facilities***

Update healthcare worker case management training curriculum, materials and job aids when any new drug is introduced.

Conduct case management TOT training for regional and provincial staff, and conduct training for district and commune health staff.

Conduct supervision and mentoring visits for health staff to assure quality of malaria case management services at health facility level: train province and district staff on supervision and mentoring procedures for malaria case management; conduct supervision visits to review quality of malaria diagnosis and treatment services and adherence to national guidelines.

Reinforce treatment adherence, monitoring and follow-up of patients with *P. falciparum* and *P. vivax* at hospitals, clinics and commune health station through routine implementation of integrated drug efficacy surveillance approaches.

#### **3.4.1.5 *Provide community-based diagnosis and treatment for malaria in all remote villages in Zones 3, 4, 5***

Review and update VHWs training materials/operation manual on malaria case detection, diagnosis and management. Print and deliver operation manual to VHWs.

Train VHWs on malaria diagnosis, treatment adherence consultation, referral, and health education.

Supervise quality of services and adherence to guidelines by VHW: develop checklist to assess VHW activities in providing malaria case management services; commune health station to assess VHW current performance based on supervision check-lists.

Create database of MMPs and hard-to-reach populations using community networks.

In remote areas with MMPs and hard-to-reach populations, improve access to information and services through CSO-led initiatives such as Community Malaria Action Teams (CMATs) to distribute fliers with basic information of local service address and contact for help and information; distribute LLINs and other personal protective package; refer and facilitate transportation of suspected cases to relevant health facilities for diagnosis and treatment, support treatment adherence.

**3.4.1.6 *Provide access to malaria testing and treatment for at-risk mobile and migrant populations via Malaria Posts at specific access points (construction sites and country/forest borders)***

Conduct assessment on the performance of Malaria Posts.

Review and update Malaria Posts Operations Manual in compliance with each area features.

Conduct assessments to select appropriate areas for malaria post placement (including epidemiological assessment, discussion with local leaders to obtain consensus on malaria post placement, staff recruitment, etc.); recruit and train staff at malaria posts; supply malaria posts with diagnostics, antimalarials and consumables; maintain activities for the malaria posts; monitor operational quality of malaria posts.

Provide diagnosis and treatment to mobile and migrant populations and high-risk groups at malaria posts: test all suspected malaria cases; treat all positive cases of malaria according to national guidelines; Refer all severe malaria cases to nearest higher level hospital.

**3.4.1.7 *Screen specific high-risk populations or those traveling to or from high endemic malaria areas***

Screen high-risk populations (soldiers, workers before and after travelling to endemic countries or domestic areas) using microscopy, RDTs, and/or PCR.

Provide malaria diagnostic and treatment services at army health posts in malaria endemic areas: collaborate with Ministry of Defense to identify high risk areas with army health posts; conduct trainings for military health stations; provide RDTs, antimalarial drugs, ITNs; test all suspected cases; provide treatment for all positive cases.

**3.4.1.8 *Engage with private sector on malaria case management to ensure provision of quality diagnosis and prompt, efficacious treatment***

Conduct survey on diagnosis and treatment service delivery at private hospitals and clinics in key targeted provinces.

Train selected private hospitals and clinics in provinces to provide care service in alignment with national diagnosis and treatment guidelines; conduct IEC/BCC on malaria prevention and elimination.

**3.4.2 Cover all people at risk of malaria with appropriate and effective vector control measures**

**3.4.2.1 *Develop strategies and plans for implementation and monitoring of Vector Control Interventions***

Update SOPs for implementation of vector control interventions: SOP on entomology surveillance; SOP on vector identification; SOP on IRS techniques; SOP on ITN techniques; SOP on vector surveillance; SOP on residual efficacy of LLINs; SOP on susceptibility bioassay. Print and disseminate the updated SOPs to provinces.

Conduct surveys on the availability and utilization of LLINs, ITNs, LLIHNs, personal protection tools of MMPs, employees at private companies (focusing on zones 3, 4, 5).

Forecast bed nets (LLIN), chemicals for ITNs treatment, IRS chemical product and material forecasting and distribution planning at district, province and national levels (to ensure universal coverage for zones 4, 5 and zone 3 bordering with zone 4 or zone 5).

Provide training on vector control to staff at provincial, district, commune level and VHWs.

#### **3.4.2.2 *Distribution of LLINs for all people in zones 4, 5 and zone 3 bordering to zone 4, 5:***

Based on stratification results and assessment results, procure LLINs from qualified supplier and distribute LLINs to communes (to ensure universal coverage of LLINs in zones 4, 5 and zone 3 bordering to zone 4, 5; hammock nets for MMPs in zones 3, 4, 5).

Develop product specifications, procure and distribute as per guidelines.

Conduct mass distribution of LLINs/LLIHNs

Conduct continuous distribution of LLINs/LLIHNs part of foci response and for at-risk populations through CSOs, malaria posts, and VHWs.

#### **3.4.2.3 *Provide insecticide for treatment of conventional nets (ITN) for populations who prefer to use their own bednet for foci:***

Develop product specifications, quantities and procure insecticide for treatment of conventional bednets.

Conduct quality assurance and residual efficacy of the insecticide prior to distribution.

Provide insecticide treatment for conventional nets at commune-level at community following annual plan and assignment.

#### **3.4.2.4 *Conduct indoor residual spraying (IRS) during focus response:***

Develop product specifications, quantities and procure insecticide for IRS.

Conduct quality assurance and residual efficacy of the insecticide.

Conduct IRS for foci in all areas.

Insecticides to be stored at the central and provincial levels (at malaria eliminated provinces) to prevent malaria transmission mosquitoes for the active prevention of malaria re-establishment.

#### **3.4.2.5 *Distribute effective personal protection tools to at risk populations including MMPs:***

Procure and distribute personal protection tools, including hammock nets and repellents to at-risk populations.

Distribute personal protection tools to MMPs and people in hard-to-reach areas.

#### **3.4.2.6 *Monitor coverage and evaluate the impact of vector control interventions:***

Provide the entomology surveillance toolkits for the central, provincial and district levels at malaria endemic areas.

Assess coverage and quality of vector control interventions post-campaign/post focus interventions.

Collect feedback from community on conducted vector interventions.

Conduct routine vector surveillance, including monitoring of insecticide resistance at about 10% of the number of the communes in endemic areas.

Develop and quarterly update vector allocation map and insecticide resistant vector map.

Identify the density of vectors, forecast progression, share information among different levels for active implementation of vector control interventions.

#### **3.4.2.7 *Conduct research studies aiming at enhancing effectiveness of vector control interventions***

Conduct research studies on the application of new tools and new interventions.

Monitor and quality assurance during the vector control campaign or evaluation of effectiveness of interventions.

Investigate forest malaria to identify sources of malaria parasites, circulation of malaria-transmitting mosquitoes and mosquito larvae and propose vector control interventions.

Conduct the operational research on efficacy of insecticide used for ITNs, IRS.

#### **3.4.2.8 *Integrate vector control interventions for malaria with other diseases***

### **3.4.3 Improve malaria epidemiological surveillance system and ensure sufficient capacity for malaria epidemic response**

#### **3.4.3.1 *Upgrade the national malaria information system (eCDS-MMS) to facilitate reporting of all data from commune to central levels***

Continuously upgrade software and hardware of the eCDS-MMS system to report all data from commune to central level.

Update master lists and reports to the system annually.

Conduct training and refresher training to malaria program staff on updated eCDS-MMS: develop materials; conduct annual training courses for NIMPE, IMPEs staff.

Maintain eCDS-MMS server and all hardware infrastructure for eCDS-MMS.

**3.4.3.2 *Update national protocols on surveillance and strengthen capacity to carry out all surveillance activities***

Review and update national surveillance operational manual: conduct TWG meetings and update surveillance guideline.

Provide training for staff at all levels on malaria surveillance activities.

Conduct supervision visits to improve technical capacity of epidemiologists at provincial and district level.

**3.4.3.3 *Report all confirmed malaria cases within 48 hours in eCDS-MMS***

Ensure all health facilities nationwide including private health facilities use eCDS-MMS. Provide training on case reporting, case investigation and eCDS-MMS for hospitals and private clinics.

Implement monthly data reviews of reports and data reported at all levels in the system.

**3.4.3.4 *Investigate and classify all confirmed cases in the country***

Train provincial and district staff on case investigation protocols and the system.

Investigate all confirmed cases following regulations.

**3.4.3.5 *Detect and respond promptly to active transmission foci in elimination-targeted areas***

Investigate and respond to foci within 7 days after a local transmission is detected following guidelines: Establish investigation team, conduct investigation, respond to foci, M&E after response.

Train health staff on focus detection, investigation, response and follow-up after response (in targeted provinces).

**3.4.3.6 *Detect and respond promptly to all potential outbreaks***

Review caseload and outbreak indicators at commune health centers on a weekly basis.

Implement prompt investigations in response to any suspected outbreak notification reports: prepare toolkits (chemicals, IRS spray can, LLINs or chemicals for ITNs); implement interventions following focus response guideline.

**3.4.3.7 *Implement proactive case detection and response in the focus***

Provide travel compensation and medical kits for VHWs in zones 4, 5 to conduct active surveillance.

Support VHWs to conduct case detection in active foci: Collect information of all populations to be tested and test all populations in the ACD areas.

Conduct proactive case detection in at-risk populations and response in high endemic areas by central level in collaboration with provincial level, CHC and VHWs.

**3.4.3.8 *Update malaria case map annually and malaria stratification over 5 years***

Update case map annually based on available data in eCDS-MMS.

Stratify malaria epidemiological area: develop stratification methodology, plan; collect data; interpret data and promulgate stratification results to update the national strategy and response activities at localities.

### **3.4.4 Improve knowledge and behaviors of people regarding to malaria to empower them to protect themselves against malaria**

#### **3.4.4.1 *Develop IEC/BCC strategy for elimination***

Undertake assessment of current IEC/BCC channels and materials.

Develop the IEC/BCC strategy on malaria prevention and elimination.

Develop IEC/BCC materials based on communication strategy: conduct TWG meetings to draft messages and identify communication materials in alignment with communication strategy; assess the effectiveness of new IEC/BCC material in pilot areas.

Print and deliver communication materials to endemic areas (poster, flipcharts, etc.).

#### **3.4.4.2 *3.4.4.2 Implement behavior change communication messages via mass media***

Broadcast malaria mass media messages via national and local television channels.

Publish malaria messages via newspaper advertisements.

Implement messages delivered via media on public transportation vehicles: develop communication materials.

Implement IEC/BCC activities through community networks.

Install IEC/BCC billboards at high endemic areas with high population at risk.

Provide means of communication to community in endemic areas (mobile loudspeaker and microphone).

#### **3.4.4.3 *Undertake direct communication in community***

Print IEC/BCC training materials (fliers, posters, booklet).

Organize communication campaigns before and during mass LLINs/ITNs distribution.

Mobilize religious, civil-social, charitable organizations, NGOs and village leaders on malaria messaging and health education.

Mobilize the participation of policy makers, local authorities in malaria prevention and elimination.

Organize “World Malaria Day” events at selected provinces.

### **3.4.5 Provide effective management and coordination of the national malaria control and elimination effort; eliminate malaria in endemic provinces; prevent malaria re-establishment in malaria eliminated provinces**

#### **3.4.5.1 *Strengthen and streamline management of malaria operations at all levels***

Maintain activities of the national steering committee on malaria control and elimination: consolidate the national steering committee, update operational mechanism; conduct routine meetings every six months and urgent meetings if needed.

Establish TWGs on surveillance, vector control, case management, IEC/BCC, and program management: develop Terms of Reference (TOR) for each TWG; conduct TWG meetings to review guidelines, update manuals, training curriculums, operational manuals under the guidance from the National Steering Committee.

Develop collaboration mechanism and activities with CSO and partners participating in malaria prevention and elimination.

Organize routine meetings with partners and social organizations at central, provincial and district levels.

Develop and publish 5-year action plan 2026 – 2030: establish the composing committee; conduct TWG meetings, composing committee meetings; conduct national workshop with MoH, relevant ministries and provinces to get feedbacks on the NSP draft; submit finalized NSP to the MoH for appraisal and approval; organize the national workshop to publish NSP 2026 – 2030.

Conduct annual program review and planning workshop at provincial level.

Conduct bi-annual program review and planning workshops at national and regional levels.

Monitor operations and manage program at all levels.

#### **3.4.5.2 *Implement procedures for the subnational certification of malaria elimination***

Review, update criteria and provide instructions on malaria elimination for provinces and districts: conduct meeting to develop materials, to consolidate feedbacks and publish updated criteria.

Provide trainings on guidelines for malaria control and elimination to malaria staff at all levels: conduct training for trainers (TOT) at national and provincial levels; conduct training for district and commune staff on criteria guidelines and malaria elimination profile.

Collect data, develop document to obtain certification for malaria elimination in some provinces.

Supervise, technically support malaria eliminated provinces.

Assess malaria elimination status: establish Provincial Evaluation Committee; conduct subnational verification of elimination visits in targeted districts and confirm district elimination status.

Central level to evaluate and certify provinces that reached the elimination criteria: establish Central Evaluation Committee; supervise and support provinces to complete malaria verification of subnational elimination process; complete the visits and desk reviews and confirm province elimination status.

#### **3.4.5.3 *Increase capacity of staff at all levels in malaria control and elimination***

Update guidelines on malaria prevention and elimination: conduct TWG meetings to revise and update the guideline; conduct National Workshop to consolidate feedbacks on guideline development; submit the revised guideline to MoH for approval and print, disseminate to provinces.

Provide training on guidelines for malaria control and elimination to malaria staff at all levels: conduct training for trainers (TOT) at national and provincial levels; at commune level in zones 3, 4, 5.

Support specialized training for senior technical staff: participate in international workshops, short courses on malaria and program management.

Procure and maintain required equipment at all levels.

Provide training on program management to central, provincial and district levels: develop appropriate materials and conduct trainings.

Develop HR database and provide training on malaria prevention for private companies or seasonal workers in malaria endemic areas.

#### **3.4.5.4 *Secure adequate financial resources and ensure effective utilization of funding for malaria control and elimination, malaria prevention of re-establishment***

Conduct advocacy meetings at central and provincial level to call for funding for malaria control and elimination, mobilize international funding for malaria control and elimination as well as malaria prevention of re-establishment in eliminated provinces.

Conduct annual internal / external audit.

#### **3.4.5.5 *Collaborate internationally and domestically***

Collaborate and share experience with other countries in the region and among provinces: participate in regional meetings/workshops; organize international workshop; organize international workshop among bordering provinces and districts.

Study exchange and experience sharing on malaria control and elimination among provinces.

#### **3.4.5.6 *Strengthen procurement and supply chain for malaria control and elimination***

Evaluate current procurement and supply chain structure following government regulations: organize workshop at central level to review and evaluate current procurement and supply chain system.

Develop and update national procurement and supply management (PSM) guidelines to align with control and elimination plan and results of review

Develop and update commodity forecasting and management method/tool for malaria control and elimination; develop / update training materials; provide training of trainers for provincial and district health leaders and staff.



Increase capacity of staff at all levels in commodity usage and management in malaria control and elimination: Update / draft SOPs and guidelines based on PSM review; provide training of trainers for provincial and district health leaders and staff on stock management and reporting.

#### **3.4.5.7 Monitor and evaluate progress toward program goals**

Develop M&E manuals.

Provide training on M&E manual for managers at central, regional, provincial and district levels.

Conduct indicator survey annually to evaluate the program.

Conduct Mid-term review (MTR) on the national program by 2023.

Conduct Program review (MPR) by 2025.

#### **3.4.5.8 3.4.5.8 Technical support from WHO and other international organizations**

Develop TOR on technical support from WHO and other international organizations.

### **3.5 Action plan – Detailed Budget Allocation 2021 – 2025**

Budget for the implementation of the Action Plan activities is from the governmental budget, local budgets and international aid. The funding is for activities: procurement of chemical and consumables for testing, insecticide, LLINs, surveillance tools and equipment, microscopes, chemical sprayers, organizing trainings and refresher trainings, communication, research, surveillance activities. Tentative budget needs for malaria prevention and elimination in the 2021-2025 period is as follows (see annex 6 for details):

	<b>Objective</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>TOTAL</b>
1	<b>Objective 1</b>	\$4,967,853	\$5,880,255	\$4,023,102	\$4,925,604	\$2,036,141	\$21,832,955
2	<b>Objective 2</b>	\$5,722,442	\$1,812,991	\$2,258,634	\$4,382,121	\$1,237,216	\$15,413,405
3	<b>Objective 3</b>	\$4,370,867	\$3,708,205	\$3,821,748	\$3,876,207	\$3,629,269	\$19,406,295
4	<b>Objective 4</b>	\$503,170	\$464,969	\$446,699	\$582,328	\$412,393	\$2,409,558
5	<b>Objective 5</b>	\$18,983,856	\$19,036,214	\$19,051,907	\$18,688,709	\$18,556,279	\$94,316,965
	<b>Total</b>	\$34,548,188	\$30,902,633	\$29,602,091	\$32,454,969	\$25,871,299	\$153,379,179

### **3.6 Implementation**

#### **3.6.1 Ministry of Health (MoH) and Ministerial Units**

##### **a) General Department of Preventive Medicine**

- To advise the MoH to direct the implementation of the strategy of malaria prevention and control

nationwide.

- Mainly in charge of malaria prevention and control activities and coordination in general under the MoH direction.
- Direct, coordinate in general surveillance activities on early detection of malaria outbreaks, risk factors, and malaria drug resistance supervision.
- Collaborate with other Ministries in implement interagency plan on malaria prevention and control.
- Propose policies, regimes and regulations in malaria prevention and control program.
- Direct, urge, and supervise localities, units under the preventive medicine system to implement malaria prevention and control intervention.

***b) Department of Planning and Finance***

- Advise the Ministry's leaders on creating and using resources from national fund, as well as local and international organizations to support for the implementation of national strategy on malaria prevention, control and elimination.
- Coordinate with the Management Board of the Health and Population Target Program in 2016-2020 period, ensure to provide funding for malaria prevention and control activities in 2016-2020. Promptly provide funding to take actions for malaria outbreaks, needed drugs, chemicals, supplies, and equipment for malaria prevention and control program.
- Coordinate with functional units to supervise and ensure the availability of antimalarial drugs, chemicals, supplies and equipment for malaria prevention and control; guidance on financing for malaria related activities.

***c) Agency of Medical Services Administration***

- To advise the Minister in direct and manage malaria treatment activities.
- Direct, urge health facilities on malaria preventive and treatment in treatment system from central to lower levels.
- Direct the development, revision and complement of treatment guideline. Conduct training to update new guideline for staff at hospital levels; review the treatment therapy in death due-to-malaria cases.
- Direct the institutes, hospitals under the MoH, provincial hospitals to prepare for medicines, emergency equipment, and other necessary equipment to provide treatment for malaria patients, including severe cases.
- Strengthening the supervision, support for all hospitals in treatment system.

***d) Department of Communication and Emulation***

- In collaboration with GDPM and related units to provide information and orient for mass media channels on malaria prevention and control communication.
- In charge of coordination with technical units to provide information for Press agencies on malaria prevention and control, conduct supportive supervision at lower levels to complete and convey communication messages to targeted group according to MoH guidelines.

***e) Agency of Drug Administration***

- Responsible for appraisal, review and approval, issue registration number, as well as strengthening the quality management of antimalarial drugs in Viet Nam.
- Develop plan and organize the inspection, supervision of the antimalarial drug production and trading.

***f) Agency of Science, Technology and Training***

- Conduct guidance, appraisal, review and approval scientific topics and applying in malaria prevention and control program.

- Coordinate with functional units to conduct clinical trial of antimalarial drugs, chemicals, and public the results to apply widely in country according to the direction of the MoH's leaders.

**g) Ministry Inspectorate**

Ministry Inspectorate will coordinate with GDPM and related Departments/Agencies, as well as NIMPE/IMPEs to accelerate inspection and examination malaria prevention and control activities, drug/chemicals manufacturing and trading.

**h) NIMPE/IMPEs**

- Responsible to develop and implement details plan, appropriate to each stage of malaria prevention, control and elimination. Direct, support and transfer technical expertise to lower levels.
- Responsible for surveillance activities, detection and treatment malaria cases, situation of drug resistance, chemical resistant mosquitoes....and propose appropriate interventions. Develop and implement malaria elimination program in provinces at risk of malaria reintroduction, areas where malaria has decreased for many years, implement elimination phase in provinces with low malaria transmission.
- Develop and implement health education communication activities on malaria prevention, control and elimination down to lower levels, to raise their awareness and willingness to participate in activities to eliminate malaria.
- Implement the plan to halt the transmission of Artemisinin-resistant species and its derivatives, in order to mobilize internal and external resources, applying effective measures to halt the spreading to other areas of Viet Nam.
- To conduct research activities, treatment methods, as well as models on malaria prevention and control.
- To conduct researches, coordinate with other units to propose appropriate policies, regulations in order to encourage people working in malaria prevention and control program, especially in grass-root level. Coordination with other sectors to update and revise national regulations for management, monitoring and evaluation, reporting from central to lower levels.
- Develop further projects to support malaria prevention and control program with the involvement of international organizations to implement and expand malaria related activities.
- Conduct annually assessment and review the implementation of malaria prevention and control strategy at provincial, regional and national levels as required.

**i) National Center for Health Communication and Education**

- To coordinate with Department of Communication and Emulation to direct Provincial Center for Health Communication and Education to implement communication activities on malaria prevention and control, especially with at-risk areas and targeted groups.
- Develop communication messages, materials on malaria prevention and control and provide for the localities.

**j) Hospitals of Tropical Diseases**

- Collect, provide treatment for patients with severe malaria, treatment failure, or malaria drug resistant cases sent from different levels.
- To conduct researches, treatment trial, and develop treatment therapy.
- Strengthen support, training on malaria treatment, conduct technical transfer for hospital and health facilities at lower levels.

### **3.6.2 Other related Ministries/Agencies**

All ministries shall organize the implementation according to assigned responsibilities under “National strategy on malaria prevention, control and elimination in 2015-2020 period, with orientations toward 2030” issued with Decision 1920/QĐ-TTg dated 27/10/2011 by the Prime Minister as the following:

***a) Ministry of information and Communication***

To direct the information and communication agencies in coordination with other health sectors in charge of malaria program to accelerate health education communication on malaria prevention, control and elimination to raise awareness, behavior change. Focusing on people living in malaria transmission areas, difficult circumstance areas, targeted group with high risk of malaria transmission, develop communication events on malaria prevention and control and elimination.

***b) Ministry of Education and Training***

To coordinate with the Ministry of Health and related agencies in develop materials on health communication and education on malaria prevention and control, in order to raise awareness and behavior change of teachers, students on malaria prevention, control and elimination.

***c) The Committee for Ethnic Minority Affairs***

To direct its subordinate agencies to coordinate with same-level health agencies in charge of malaria prevention and control in implementing the contents and action programs of the national strategy on malaria prevention and control.

***d) Ministry of Labor, War Invalids and Social Affairs***

To coordinate with the Ministry of Health and related ministries and sectors in studying and working out regimes and policies for cadres, public employees and workers engaged in malaria prevention, control and elimination.

***e) Ministry of Planning and Investment and the Ministry of Finance***

To arrange and allocate funds according to the State Budget Law and current guidelines for the implementation of national malaria prevention and control programs according to National Assembly-approved national budget plans.

***f) The Ministry of National Defense and the Ministry of Public Security***

Take the initiative in implement the strategy among the armed forces according to the characteristics of each ministry, and in allocating budgets for this work; and join malaria prevention and control activities in localities where their units are based.

***g) The Ministries of Construction, Industry and Trade, and Transport***

Develop and implement malaria prevention and control action plans for their cadres, employees and workers in malaria-affected areas and take the initiative in allocating budgets for this work.

***h) The Ministry of Agriculture and Rural Development***

Develop and implement malaria prevention and control action plans for their cadres, employees and workers in malaria-affected areas and take the initiative in allocating budgets for this work.

### **3.6.3 Local authorities**

#### ***a) Provincial/Municipal Department of Health***

Advise the Provincial/Municipal People's Committee to strengthen malaria prevention and elimination activities at local levels; to strengthen the activities of the Steering Committee on epidemic prevention and control, agree on interventions to prevent and eliminate malaria under the direction of the Steering Committee of epidemic prevention of the Ministry of Health. Fully implement the regimes and policies for officials involved in malaria prevention and elimination.

Making plans for malaria prevention and elimination in provinces and cities. Focal points to consolidate additional funding proposals from medical units to submit to provincial / municipal People's Committees for approval.

Localities bordering with other countries to supervise migration, exchange and malaria prevention and elimination activities with neighboring countries.

Mandate Preventive Medicine Centers / Malaria Control Center and Centers for Disease Control in provinces and cities to closely monitor malaria situation and prevention activities to villages, hamlets, communes, wards, households, assess risk factors and malaria trends to promptly report to the Ministry of Health as regulated; organize the implementation of response to malaria outbreak under the Health Ministry's regulations; coordinate with Institutes of Malariology, Parasitology and Entomology to carry out surveillance activities, organize malaria investigation and implement prevention measures according to approved plans.

Direct hospitals and medical clinics to develop plan for hospitalization and treatment, prepare sufficient medicines, emergency equipment for resuscitation and necessary equipment to be ready for hospitalization and emergency treatment; to provide training on first aid regimens, treatment and guiding treatment facilities in implementation.

Conduct monitoring and evaluation of the effectiveness of malaria prevention and elimination by units in provinces and cities.

#### ***b) Centers for Disease Control of provinces and cities***

Advise the work of the provincial / municipal malaria control and elimination plan.

Closely monitor malaria situation and prevention activities to villages, hamlets, communes, wards, households, assess risk factors and malaria trends to promptly report to the Ministry of Health as regulated; organize the implementation of response to malaria outbreak under the Health Ministry's regulations.

Organize activities of early detection of diseases, timely treatment, following prescribed regimens to ensure adequate doses and duration; supervise activities of microscopy posts, treatment work at microscopy posts; vector surveillance.

Organize active malaria prevention activities: distribute LLINs, ITNs, and spray insecticidal chemicals.

Organize activities to disseminate information and guide people to take measures to prevent and eliminate malaria.

Coordinate with the Institute of Malariology - Parasitology - Entomology to carry out key surveillance activities following approved plans.

Direct lower levels and support lower levels in terms of expertise, human resources and material resources; check and supervise the prevention and control of epidemics in the provinces and cities.

***c) Provincial, municipal and regional hospitals***

Carry out hospitalization and treatment for severe cases according to the level of treatment following regulations of the Ministry of Health.

Provide training on emergency regimens and malaria treatment for district hospitals.

Set up mobile examination and treatment teams to assist localities in deploying examinations to detect and treat malaria patients with appropriate regimen and sufficient dosage.

Report malaria cases completely and promptly to the Preventive Medicine Center of provinces and cities according to regulations.

***d) Provincial and city Center for Health Education and Communication***

Collaborate with the Central Center for Health Education and Communication and local health facilities, local and central mass media to improve communication about malaria risks, health education and disseminate knowledge on malaria prevention and elimination measures, especially for high-risk areas and malaria hotspots.

Develop materials on health education and communication according to current regulations; organize training on malaria prevention communication for staff in charge of health education and communication.

***e) District Health Center***

To advise the People's Committees of districts and towns on directing and developing plans to prevent and eliminate malaria in localities. Implement malaria prevention activities under the guidance of the Ministry of Health.

Closely monitor malaria situation in the area, conduct interventions to promptly deal with the occurrence of malaria epidemic, supervise activities of microscopy posts, diagnosis and treatment in villages, hamlets, communes and wards for supplement and adjust in time; monitoring the situation of fluctuations in high-risk population of the district.

Organize ITNs chemical treatment activities, sprayed insecticidal chemicals

Organize activities to communicate, instruct and mobilize people to carry out measures to prevent and eliminate malaria.

***f) Hospitals, medical clinics***

Carry out hospitalization and treatment of malaria patients, especially severe cases and relapsed cases to appropriately follow regimens and thoroughly and to limit malaria mortality.

Support treatment for microscopy posts in key areas and malaria outbreak occurrence areas.

***g) Commune health stations***

Advise the Commune People's Committee on malaria prevention and elimination in the commune.

Organize local malaria prevention activities, organize and maintain microscopy posts, manage at-risk populations; provide treatment for malaria patients according to the instructions; monitor and supervise treated cases in the catchment area to follow-up patients' treatment adherence.

Disseminate information of malaria prevention and elimination measures, sleeping under nets, conduct ITNs chemical treatment, spray insecticidal chemicals. Mobilize communities to participate in malaria prevention and elimination activities.

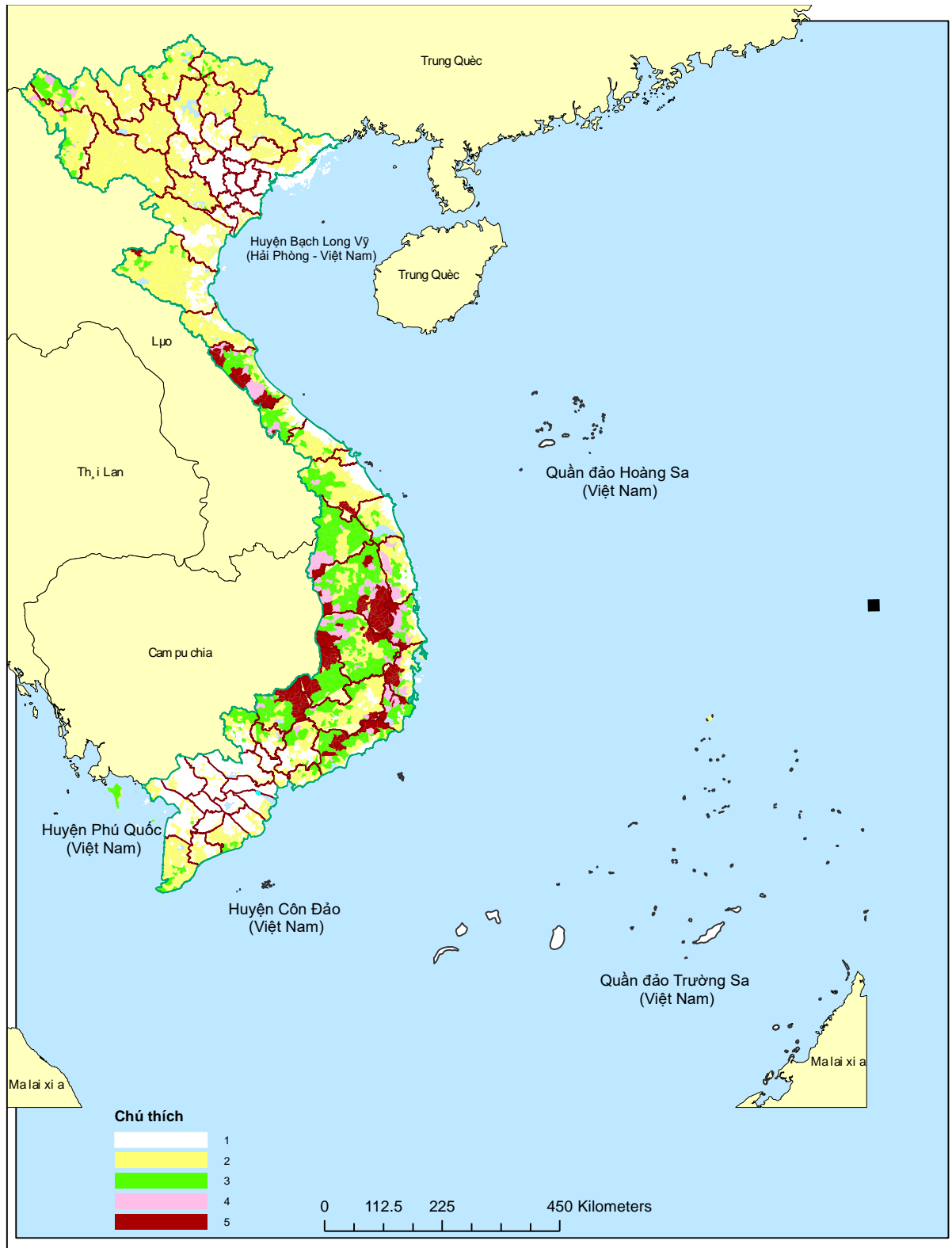
The Department of Preventive Medicine was assigned to act as a focal point to guide, direct and urge the implementation of the Plan and report the results of the plan implementation to the Ministry of Health leaders.

**VICE-MINISTER OF HEALTH**

**Prof. Nguyen Truong Son**

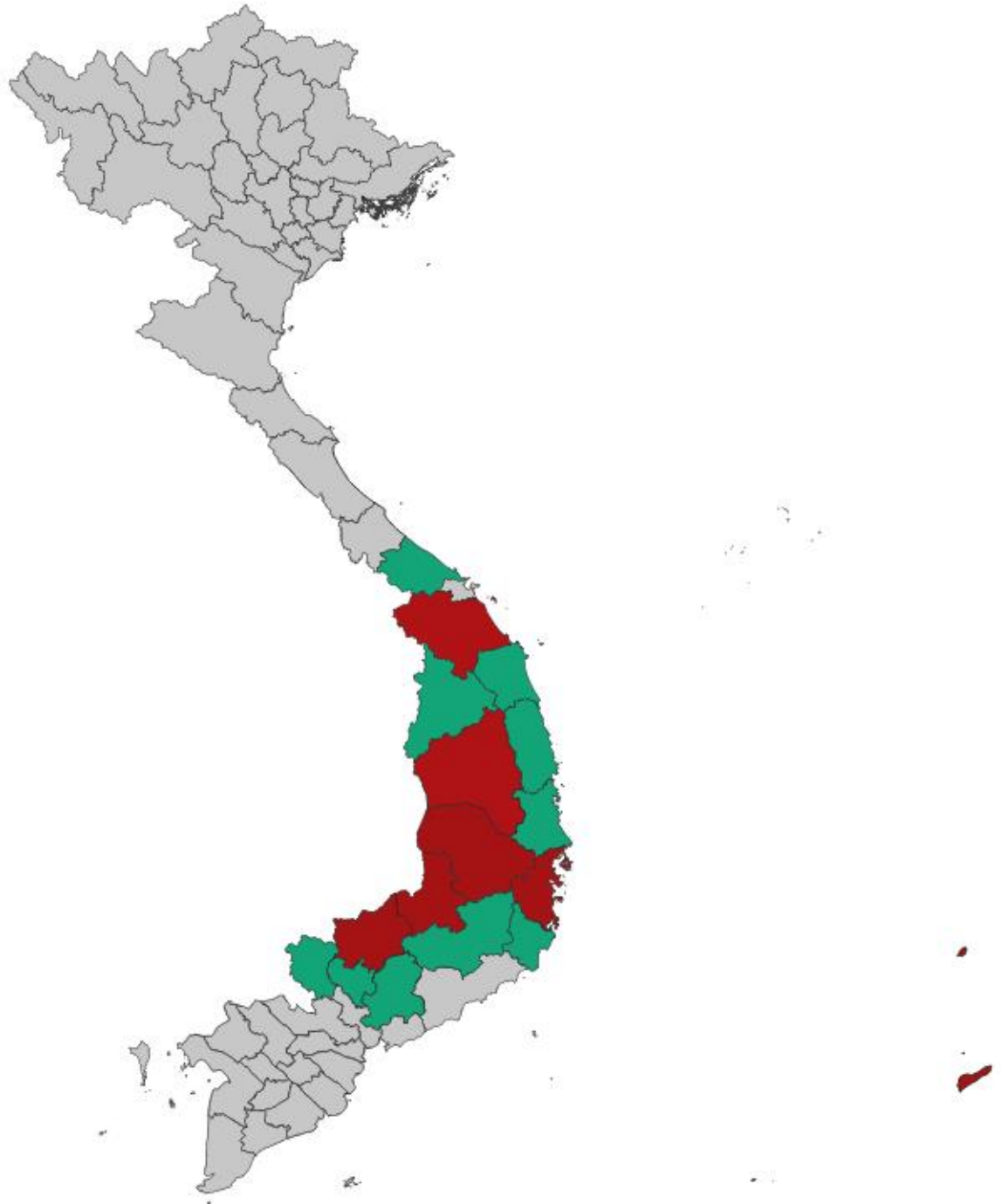
## IV. ANNEXES

### Annex 1: Epidemiological Stratification Map 2019

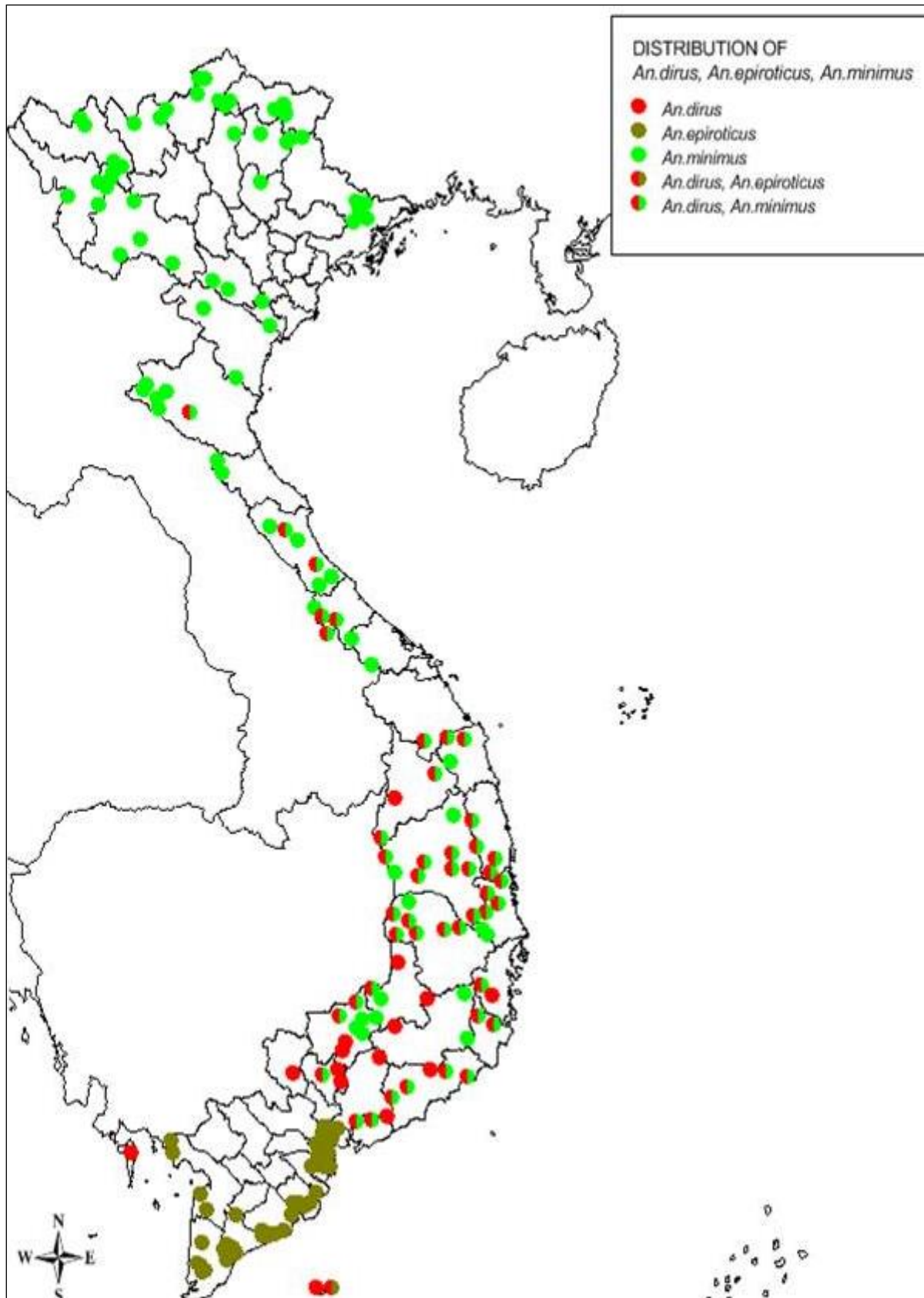




## Annex 2: Drug Resistant Parasite Distribution 2019



### Annex 3: Malaria transmitting mosquito distribution 2019



**Annex 4: Aggregate report of malaria morbidity rate per 1,000 population and malaria mortality rate per 100,000 population in the period 2016-2019 and projection for 2021-2025**

	Indicators	Confirmed case p̄r1000 pop. and malaria death per 100.000 for 2016-2019 and projection for 2021-2025									
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	Total of parasites	4,548	4,813	4,665	3,731	2,808	1,884	963	826	688	4,548
2	Number of local parasites	2,758	2,827	1,226	1,188	950	715	480	245	210	175
3	P.falciparum	2,858	2,966	3,110	2,332	1,554	776	-	-	-	2,858
4	Parasite rate/1000 population	4.52%	4.75%	5.03%	4.85%	3.83%	2.85%	1.89%	0.96%	0.81%	0.67%
5	Number of deaths	3	6	1	0	0	0	0	0	0	0
6	Mortality rate	0.003	0.006	0.001	0	0	0	0	0	0	0

## Annex 5: Malaria Elimination Roadmap

	Province	Malaria Elimination Roadmap (1 = malaria control; 2 = malaria elimination; 3 = prevention of malaria re-establishment)									
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	Lai Châu	1	1	2	2	2	2	3	3	3	3
2	Điện Biên	1	1	2	2	2	2	3	3	3	3
3	Sơn La	1	1	2	2	2	2	3	3	3	3
4	Lào Cai	2	2	2	2	3	3	3	3	3	3
5	Yên Bái	2	2	2	2	3	3	3	3	3	3
6	Hà Giang	1	1	1	2	2	2	2	3	3	3
7	Tuyên Quang	1	1	2	2	2	2	3	3	3	3
8	Thái Nguyên	1	1	1	2	2	2	3	3	3	3
9	Bắc Cạn	1	1	2	2	2	2	3	3	3	3
10	Cao Bằng	1	1	1	2	2	2	2	3	3	3
11	Lạng Sơn	1	1	1	2	2	2	2	3	3	3
12	Quảng Ninh	3	3	3	3	3	3	3	3	3	3
13	Hoà Bình	2	2	2	2	3	3	3	3	3	3
14	Bắc Ninh	3	3	3	3	3	3	3	3	3	3
15	Bắc Giang	3	3	3	3	3	3	3	3	3	3
16	Phú Thọ	2	2	2	2	3	3	3	3	3	3
17	Vĩnh Phúc	3	3	3	3	3	3	3	3	3	3
18	TP. Hà Nội	2	2	3	3	3	3	3	3	3	3
19	Hải Dương	3	3	3	3	3	3	3	3	3	3
20	Hưng Yên	3	3	3	3	3	3	3	3	3	3
21	TP. Hải Phòng	3	3	3	3	3	3	3	3	3	3
22	Thái Bình	3	3	3	3	3	3	3	3	3	3
23	Hà Nam	3	3	3	3	3	3	3	3	3	3
24	Nam Định	2	2	3	3	3	3	3	3	3	3
25	Ninh Bình	2	2	2	2	3	3	3	3	3	3
26	Thanh Hoá	1	1	1	1	2	2	2	2	3	3
27	Nghệ An	1	1	1	1	2	2	2	2	3	3
28	Hà Tĩnh	1	1	1	1	2	2	2	2	2	3
29	Quảng Bình	1	1	1	1	2	2	2	2	2	3
30	Quảng Trị	1	1	1	2	2	2	2	3	3	3
31	Thừa Thiên Huế	1	1	1	2	2	2	2	3	3	3
32	TP. Đà Nẵng	2	3	3	3	3	3	3	3	3	3

	Province	Malaria Elimination Roadmap (1 = malaria control; 2 = malaria elimination; 3 = prevention of malaria re-establishment)									
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
33	Quảng Nam	1	1	1	1	1	2	2	2	2	2
34	Quảng Ngãi	1	1	2	2	2	2	3	3	3	3
35	Bình Định	1	1	1	1	1	1	1	1	2	2
36	Phú Yên	1	1	1	1	1	1	1	1	1	2
37	Khánh Hoà	1	1	1	1	1	1	1	1	1	2
38	Ninh Thuận	1	1	1	1	1	1	1	1	2	2
39	Bình Thuận	1	1	2	2	2	2	3	3	3	3
40	Gia Lai	1	1	1	1	1	1	1	1	1	2
41	Kon Tum	1	1	1	1	2	2	2	2	3	3
42	Đắk Lắk	1	1	1	1	2	2	2	3	3	3
43	Đắk Nông	1	1	1	1	1	1	1	1	2	2
44	Lâm Đồng	1	1	1	1	1	2	2	2	2	3
45	Đồng Nai	1	1	1	2	2	2	2	3	3	3
46	Bình Dương	1	1	1	2	2	2	2	3	3	3
47	Bình Phước	1	1	1	1	1	1	1	1	1	2
48	Tây Ninh	1	1	1	2	2	2	2	3	3	3
49	Bà Rịa - Vũng Tàu	1	1	2	2	2	2	3	3	3	3
50	TP. Hồ Chí Minh	2	2	2	3	3	3	3	3	3	3
51	Long An	2	3	3	3	3	3	3	3	3	3
52	Tiền Giang	3	3	3	3	3	3	3	3	3	3
53	Bến Tre	2	2	2	2	3	3	3	3	3	3
54	Đồng Tháp	3	3	3	3	3	3	3	3	3	3
55	An Giang	1	2	2	2	3	3	3	3	3	3
56	Vĩnh Long	3	3	3	3	3	3	3	3	3	3
57	Trà Vinh	3	3	3	3	3	3	3	3	3	3
58	TP. Cần Thơ	3	3	3	3	3	3	3	3	3	3
59	Hậu Giang	3	3	3	3	3	3	3	3	3	3
60	Sóc Trăng	1	1	1	2	2	2	2	3	3	3
61	Kiên Giang	2	2	2	2	3	3	3	3	3	3
62	Bạc Liêu	1	1	2	2	2	2	3	3	3	3
63	Cà mau	1	1	1	2	2	2	2	3	3	3

## Annex 6: Activities Details and Budget Allocation in period 2021-2025

Level	#	Row Title	Year					Total
			2021	2022	2023	2024	2025	
<b>Total</b>			\$34,548,188	\$30,902,633	\$29,602,091	\$32,454,969	\$25,871,299	\$153,379,179
Objective	1	Ensure that all people have better access to early diagnosis, prompt and effective treatment of malaria at the public and private health facilities	\$4,967,853	\$5,880,255	\$4,023,102	\$4,925,604	\$2,036,141	\$21,832,955
Strategy	1.1	Increase access to and utilization of quality malaria diagnostic services at provincial, district, and commune-level public health facilities	\$971,587	\$512,744	\$907,759	\$405,951	\$648,828	\$3,446,869
Strategy	1.2	Strengthen quality assurance and control systems for malaria diagnosis	\$567,613	\$524,163	\$517,550	\$536,324	\$517,550	\$2,663,200
Strategy	1.3	Ensure prompt access to quality, efficacious antimalarial medications at all public health facilities and other qualified health facilities	\$444,182	\$273,245	\$388,814	\$282,542	\$305,592	\$1,694,374
Strategy	1.4	Increase quality of malaria case management services provided by healthcare workers in public sector health facilities	\$31,062	\$2,392,187	\$31,062	\$2,392,187	\$31,062	\$4,877,560
Strategy	1.5	Provide community-based diagnosis and treatment for malaria in all remote villages in Risk Zone 3, 4, 5	\$1,682,307	\$957,393	\$957,393	\$1,015,640	\$290,727	\$4,903,461
Strategy	1.6	Provide access to malaria testing and treatment for mobile and migrant risk populations via Malaria Posts at specific access points (work sites and travel routes)	\$942,830	\$892,252	\$892,252	\$276,163	\$225,585	\$3,229,082
Strategy	1.7	Screen specific high-risk populations or those traveling to or from high endemic malaria areas	\$16,798	\$16,798	\$16,798	\$16,798	\$16,798	\$83,988
Strategy	1.8	Engage with the private sector on malaria case management to ensure provision of quality diagnosis and prompt, efficacious treatment	\$311,474	\$311,474	\$311,474	\$0	\$0	\$934,422
Strategy	1.9	Provide standby treatment (ACT) to risk populations travelling to remote endemic areas beyond reasonable reach of health services	\$0	\$0	\$0	\$0	\$0	\$0
Objective	2	Cover all people at risk of malaria with appropriate and effective vector control measures	\$5,722,442	\$1,812,991	\$2,258,634	\$4,382,121	\$1,237,216	\$15,413,405
Strategy	2.1	Develop strategies and plans for implementation and monitoring of Vector Control Interventions	\$150,517	\$2,012	\$1,281	\$147,079	\$1,281	\$302,171
Strategy	2.2	Distribute LLINs to all people living in zone 4,5, and zone 3 bordering to zone 4-5	\$4,191,240	\$442,605	\$915,910	\$3,052,875	\$85,919	\$8,688,550
Strategy	2.3	Provide insecticide for treatment of conventional nets (ITN) for populations who prefer to use their own bednet for foci (before delivering ITNs, will have the survey on what kinds of nets are available)	\$37,128	\$37,128	\$37,128	\$37,128	\$37,128	\$185,642
Strategy	2.4	Conduct indoor residual spraying (IRS) in active foci	\$186,709	\$192,516	\$173,331	\$167,170	\$170,130	\$889,857
Strategy	2.5	Distribute effective personal protection tools to at risk populations including MMPs	\$990,799	\$941,265	\$894,208	\$849,504	\$807,035	\$4,482,813
Strategy	2.6	Monitor coverage and evaluate the impact of vector control interventions	\$84,340	\$67,774	\$67,774	\$67,774	\$67,774	\$355,438
Strategy	2.7	Assess the effectiveness of vector control interventions	\$81,707	\$129,690	\$169,001	\$60,590	\$67,947	\$508,936

Objective	3	Improve the malaria epidemiological surveillance system and ensure sufficient capacity for malaria epidemic response	\$4,370,867	\$3,708,205	\$3,821,748	\$3,876,207	\$3,629,269	\$19,406,295
Strategy	3.1	Upgrade national malaria information system (eCDS-MMS) to facilitate reporting of all data from commune to central levels	\$123,476	\$81,402	\$81,402	\$71,156	\$81,402	\$438,836
Strategy	3.2	Update national protocols and strengthen capacity to carry out all surveillance activities	\$2,413,895	\$2,181,441	\$2,288,640	\$2,232,386	\$2,189,561	\$11,305,923
Strategy	3.3	Report all confirmed malaria cases within 48 hrs via national case-based reporting system (eCDS-MMS)	\$17,803	\$0	\$0	\$0	\$0	\$17,803
Strategy	3.4	Investigate and classify all confirmed cases in the country	\$14,044	\$9,428	\$4,817	\$4,129	\$3,441	\$35,859
Strategy	3.5	Detect and respond promptly to active transmission foci in elimination-target areas	\$410,342	\$294,393	\$219,958	\$176,014	\$137,366	\$1,238,074
Strategy	3.6	Detect and respond promptly to all potential outbreaks	\$28,182	\$28,182	\$28,182	\$28,182	\$28,182	\$140,912
Strategy	3.7	Implement proactive case detection and response in the focus	\$1,354,726	\$1,113,358	\$1,113,358	\$1,354,726	\$1,113,358	\$6,049,528
Strategy	3.8	Update malaria case map and risk stratification map in 2023	\$8,399	\$0	\$85,390	\$9,613	\$75,959	\$179,361
Objective	4	Improve the knowledge and behavior of people relating to malaria to empower them to protect themselves against malaria	\$503,170	\$464,969	\$446,699	\$582,328	\$412,393	\$2,409,558
Strategy	4.1	Develop IEC/BCC plan and messages for elimination	\$81,171	\$21,062	\$72,741	\$15,178	\$38,435	\$228,588
Strategy	4.2	Implement behavior change communication messages via mass media	\$180,180	\$284,820	\$232,094	\$232,524	\$232,094	\$1,161,711
Strategy	4.3	Conduct IEC/BCC directly to communities	\$241,819	\$159,087	\$141,864	\$334,626	\$141,864	\$1,019,260
Objective	5	Provide effective management and coordination of the national malaria control and elimination effort	\$18,983,856	\$19,036,214	\$19,051,907	\$18,688,709	\$18,556,279	\$94,316,965
Strategy	5.1	Strengthen and streamline management of malaria operations at all levels	\$623,130	\$622,979	\$622,979	\$622,979	\$640,182	\$3,132,248
Strategy	5.2	Procedures for the subnational certification of malaria elimination	\$16,804	\$16,804	\$133,253	\$16,804	\$16,804	\$200,469
Strategy	5.3	Increase human resource (HR) capacity for malaria control and elimination	\$726,545	\$681,977	\$674,995	\$733,528	\$674,995	\$3,492,039
Strategy	5.4	Secure adequate financial resources and ensure effective utilization of funding for malaria control and elimination	\$53,474	\$53,474	\$53,474	\$53,474	\$53,474	\$267,368
Strategy	5.5	Enhance both international and domestic cooperation and coordination	\$5,832	\$5,832	\$17,832	\$5,832	\$17,832	\$53,161
Strategy	5.6	Strengthen procurement and supply chain for malaria control and elimination	\$5,779	\$6,877	\$926	\$7,967	\$4,689	\$26,237
Strategy	5.7	Monitor and evaluate progress toward program goals	\$87,515	\$183,493	\$83,671	\$183,493	\$83,671	\$621,842
Strategy	5.8	WHO technical Assistance	\$309,000	\$309,000	\$309,000	\$309,000	\$309,000	\$1,545,000