



Technical Assistance Consultant's Report

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Greater Mekong Subregion: Strengthening Malaria Control for Ethnic Minorities (Financed by the Poverty Reduction Cooperation Fund)

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Asian Development Bank

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Abbreviations

ACT	artemisinin-based combination therapy
ACTMalaria	Asian Collaborative Training Network for Malaria
ADB	Asian Development Bank
AusAID	Australian Agency for International Development
BCC	behaviour change communication
CHC	commune health centre
CMPE	Centre for Malariology, Parasitology and Entomology, Lao People's Democratic Republic
CoMC	community malaria clinic
EDAT	early diagnosis and treatment
EMG	ethnic minority group
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GMS	Greater Mekong Subregion
JICA	Japan International Cooperation Agency
HU	Health Unlimited
IEC	information, education and communication
IMPE-QN	Institute of Malariology, Parasitology and Entomology, Quy Nhon, Viet Nam
ITN	insecticide-treated net
KIAsia	Kenan Institute Asia
LLIN	long-lasting insecticidal net
M&E	monitoring and evaluation
MSH	Management Sciences for Health
NGO	nongovernmental organization
NMCP	National Malaria Control Programme
NMI	national malaria institution
POA	plan of action
RDT	rapid diagnostic test
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VBDC	Vector-Borne Disease Control
VHV	village health volunteer
VHW	village health worker
VMCV	village malaria control volunteer
VMW	village malaria worker
YIPD	Yunnan Institute of Parasitic Diseases, Simao, China
WHO	World Health Organization

SUMMARY

Malaria is one of the diseases undermining the health of ethnic minorities in the Greater Mekong Subregion (GMS). The six GMS countries¹ have significantly improved their overall malaria situation by promoting the use of insecticide-treated nets (ITNs) and encouraging patients to seek early diagnosis and appropriate treatment. However, ethnic minority populations, migrants and forest workers, many of which live in remote areas, remain at risk. These populations are disconnected from the modern world because of their poor socioeconomic status and deficiencies in education, formal land ownership and citizen recognition.²

In 2005, the Asian Development Bank (ADB) approved regional technical assistance of US\$ 750 000 to support the World Health Organization (WHO) Regional Office for the Western Pacific in combating malaria in Mekong countries. The goal of the Project, *Strengthening Malaria Control for Ethnic Minorities in the Greater Mekong Subregion*, is to reduce the malaria burden among poor ethnic minority groups living in malaria-prone areas, thereby helping to reduce child and maternal mortality. The Project started in October 2005 and will be completed by 31 December 2007. The specific objectives of the project have been defined as follows:

- (1) to build capacity of national malaria institutions to develop acceptable, affordable and effective strategies for malaria control for ethnic minorities;
- (2) to scale up malaria control efforts for these populations through national malaria control programmes; and
- (3) to promote regional collaboration for malaria control.

Preliminary findings indicate that, despite delays in project implementation, country teams have made good progress against planning activities except in Myanmar. Countries have collected baseline data (which have indicated, among other findings, very low bednet coverage and usage among the targeted communities). All countries are using a community-based approach. Village volunteers and local health staff have been trained and re-trained on malaria control and prevention services. Bednets have been distributed to increase coverage among households and forest-goers in the targeted villages. Rapid diagnostic tests (RDTs) and artemisinin-based combination therapies (ACTs) have been distributed to the volunteers and health staff working in peripheral health care facilities. These activities have been monitored regularly through monthly meetings and supervision visits. Malaria educational materials from the previous ABD-WHO project have been upgraded, tested and reproduced.³

Since its inception, the Project has faced numerous challenges. Delays in project implementation were largely due to administrative hurdles in the release of funds and the limited availability of national and field staff who divide their time among many projects. A lack of capacity was also observed in conducting, analysing and reporting on the baseline surveys, particularly regarding qualitative data. At the broader level, the remote and difficult-to-access locations of the targeted villages have imposed significant difficulties on the provision of commodities, delivery of services and the supervision of activities, especially during the rainy season. Project

¹ Cambodia, People's Republic of China, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam.

² ADB. 2000. *Technical Assistance for Health and Education Needs of Ethnic Minorities in the GMS*. Manila.

³ ADB. 2000. *Regional Technical Assistance for the Roll Back Malaria Initiative in the Greater Mekong Subregion*. Manila.

implementation has also suffered from health system constraints that are beyond the scope of the Project, such as the inadequate coverage of quality basic health care services in remote areas and an unclear free-of-charge strategy for essential health commodities, including bednets, malaria diagnosis and antimalarial drugs.

Country teams and project experts have made several recommendations to sustain and strengthen malaria control activities that target ethnic minorities in the GMS, including: (1) strengthen the support system for village volunteers; (2) identify appropriate prevention mechanisms for forest-goers (as ITN distribution may not be effective for this population); and (3) strengthen national capacity for monitoring and evaluating interventions that target ethnic minority populations. Challenges imposed by the remote and difficult-to-access environment need to be addressed with innovative practical approaches, for example, (1) supplying villages with commodities to last through the transmission season, (2) strengthening collaboration with other health programmes and private providers, and (3) estimating the additional costs of providing, integrating and scaling up the interventions targeting ethnic minorities into national malaria control programmes.

1. Background

1.1 Malaria situation in the Mekong countries

As a result of intensive control efforts, the malaria burden has been drastically reduced in five of the six countries of the Greater Mekong Subregion (GMS). Official epidemiological records collected through the World Health Organization (WHO) show that malaria mortality and morbidity in the Mekong countries have been reduced by almost 50% in 2005, as compared to 1998. This goal was not targeted to be reached until 2010. Through the systematic use of innovative control approaches, Viet Nam's malaria programme has reduced deaths from around 5000 in 1990 to less than 50 in 2005. In Thailand, malaria deaths have been reduced from around 750 in 1996 to less than 70 in 2005. Other Mekong countries, except Myanmar, have also substantially reduced their malaria burden beyond expectations.

While it has been proven that well-managed malaria control measures have drastically reduced mortality in the "easy-to-reach" population, many ethnic minorities live in remote areas, far from basic health facilities. To further reduce the burden of malaria, Mekong countries now face the challenge of improving the access of hard-to-reach or marginalized populations to basic and referral health care services, including malaria commodities.

Malaria is one of the diseases still undermining health conditions of ethnic minorities in the Mekong region. About one third of the ethnic minority population, approximately seven million people, live in remote, often hilly and forested areas where malaria vectors are developing. The majority of ethnic minorities are very poor. They are more vulnerable to the disease because of (1) lack of education and communication, (2) lack of formal land ownership, (3) lack of citizenship (in some countries), (4) lack of recognition and protection by the political power in place, and (5) lack of familiarity with and connection to the modern world.⁴ Although the malaria situation in the Mekong region has improved over the past several years, it is widely recognized that ethnic minorities, migrants and forest workers remain the most at risk for malaria.

1.2 Project rationale

The Asian Development Bank (ADB), a key supporter of malaria control in the GMS, has recognized the importance of controlling malaria among the most vulnerable groups in Mekong countries.

In November 2002, ADB and WHO launched a "communication for behaviour change" initiative to support national malaria control programmes (NMCPs) in the GMS. The objectives were:

- (1) to develop user-friendly, culturally adjusted information, education and communication (IEC) materials and guidelines to be used in and/or by ethnic minority groups;
- (2) to strengthen NMCPs' capacity in community-based malaria control and treatment activities; and
- (3) to increase the responsiveness of NMCPs to address the needs of the target communities, particularly the most poor and vulnerable people.

⁴ ADB. 2000. *Technical Assistance for Health and Education Needs of Ethnic Minorities in the GMS*. Manila.

This project (1) increased the interest of central-level programmes in strengthening malaria control among hard-to-reach populations, (2) produced an innovative set of IEC materials that target ethnic minorities, and (3) recognized the challenges of carrying out and measuring the impact of programmes in such difficult environments.

In June 2005, ADB agreed to extend its financial support for malaria control in the GMS through a project entitled: *Strengthening Malaria Control for Ethnic Minorities in the Greater Mekong Subregion*. The WHO Regional Office for the Western Pacific assumed responsibility for its implementation alongside NMCPs and various partners. The Project started in October 2005 and will be completed in December 2007.

2. Objectives and expected outputs of the Project

2.1 General objectives

The Project's goal is to reduce the burden of malaria among poor ethnic minority groups living in remote malaria-prone areas in the GMS, thereby helping to reduce child and maternal mortality.

Since more innovative and effective malaria control interventions are needed in these particular situations, the Project intends to pilot and document malaria control strategies that are specifically designed for poor ethnic minority groups. It also aims to determine the additional costs of carrying out these interventions, integrating them in routine NCMPs and scaling them up.

2.2 Specific objectives

The Project's objectives are:

- (1) to build capacity of national malaria institutions to develop acceptable, affordable and effective strategies for malaria control for ethnic minorities;
- (2) to scale up malaria control efforts for these populations through NMCPs; and
- (3) to promote regional collaboration for malaria control.

2.3 Expected outputs

Expected outputs of the Project are as follows:

- (1) The capacity of NMCP staff to develop and implement malaria control strategies targeting vulnerable ethnic minority groups is strengthened.
- (2) Malaria control interventions are piloted and evaluated in the selected ethnic minority areas.
- (3) Plans are developed for scaling up malaria control interventions in ethnic minority groups outside the project area.
- (4) Advocacy for improved malaria control in areas where ethnic minorities reside is increased.
- (5) Operational research (both qualitative and quantitative) is strengthened. This is particularly important in the area of monitoring and evaluation (M&E).
- (6) Possible benefits and constraints of regional collaboration for malaria control are evaluated to serve as a model for collaboration between other communicable disease control programmes and the health sector.
- (7) Regional guidelines and/or strategies for improving malaria control in the areas where ethnic minorities reside are developed and disseminated, and regional collaboration for malaria control is promoted.

2.4 Project methodology

Since key elements of the Project are (1) building national and local capacity and (2) advocating and sharing lessons with partners, the following approaches have been carried adopted:

- regional workshops to plan, finalize and monitor country project interventions;
- regional training sessions to conduct qualitative and quantitative data collection and analysis;
- country assistance to finalize research protocols;
- direct assistance in the field to strengthen the capacity of team members in conducting field research;
- direct assistance in the field to carry out education, communication and social mobilization;
- programme review workshops to update and share lessons from project implementation;
- regular exchange of e-mails between the project coordinator and project focal points to provide updates on progress through a standardized matrix and to seek clarification;
- technical support in malaria epidemiology and entomology (though direct field visits);
- routine country monitoring visits as well as in-country and long-distance technical support through the exchange of e-mails; and
- project presentation during national, regional and international forums.

2.5 Experts involved in the Project

Project implementation has been monitored by the Project Coordinator, Mr Pricha Petlueng, who is based in Vientiane.

The following project consultants have provided technical input in their respective fields, both remotely and directly, i.e. during workshops, meetings and field visits: Dr Jo Lines, malaria expert, London School of Hygiene and Tropical Medicine (LSHTM); Dr Holly Ann Williams, malaria and qualitative methods expert, United States Centers for Disease Control and Prevention (CDC Atlanta); and Ms Jane Bruce, survey methodology expert, LSHTM. WHO in-country project focal points have also provided technical assistance as needed.

Technical assistance and administrative follow-up have been ensured from WHO by Dr Eva Christophel, Regional Office for the Western Pacific, Manila, and Dr Charles Delacollette, Mekong Malaria Programme Coordinator, Bangkok; and from ADB by Ms Barbara Lochmann in Manila.

3. Project design and country plans

3.1 Project design and strategic interventions

Following the success of the ADB-WHO Roll Back Malaria Initiative in the GMS from 2002 to 2005, which developed local malaria education and communication strategies and tools,⁵ the current Project supports and collaborates with the same ethnic minority groups – Kreung in Cambodia, Wa in China-Yunnan, Brau-Lave in the Lao People's Democratic Republic, Shan in Myanmar, Karen in

⁵ For details, see Table 1, Table 2 and Annex 3 of the report, *Strengthening Malaria Control for Ethnic Minorities in the GMS – Project Inception and First Advisory Committee Meeting, Vientiane, Lao People's Democratic Republic, 25-26 November 2005*. Manila, WHO, 2006.

Thailand and Raglai in Viet Nam – in order to further improve the malaria situation in the target communities.

The Project's First Advisory Committee Meeting was conducted in November 2005 in Vientiane, Lao People's Democratic Republic. During the meeting, representatives from the six GMS countries identified gaps in their national malaria control programmes and service delivery systems. Country representatives selected a team composed of one project focal person from the national malaria institution (NMI) and one provincial malaria officer as the implementing partner.

Participating countries identified the following strategic elements as measurable outputs to prevent and reduce malaria morbidity:

- (1) increased knowledge of the target population regarding malaria prevention and control;
- (2) improved coverage and/or correct utilization of ITNs and improved access to and/or use of malaria diagnosis and treatment;
- (3) enhanced local capacity to ensure ownership and create a foundation for the scale-up and maintenance of interventions; and
- (4) strengthened advocacy for continued attention from stakeholders and local authorities to the vulnerable ethnic minority groups.

Country teams identified the following supportive activities to implement and monitor the above strategic interventions:

- (1) health education and communication;
- (2) social mobilization; and
- (3) enhanced M&E.

A set of performance indicators was developed for each expected output of country project intervention.⁶

3.2 Country action plans

Following the First Advisory Committee Meeting in November 2005, each of the GMS countries developed a project implementation plan. The country plans were finalized and budgeted by country teams in cooperation with project focal persons and WHO country malaria officers during the Second Advisory Committee Meeting in March 2006 in Chiang Mai, Thailand (see Section 4.2 for details). All of the country plans, except Myanmar's, were approved by the Advisory Committee at that time. Myanmar's country plan and budget were eventually approved in August 2006. ADB funds are being used to finance consulting services, pilot testing, training, workshops and advocacy. Funds contributed by participating countries are financing counterpart staff and commodities such as ITNs, long-lasting insecticide-treated nets (LLINs), ACT and RDTs, through either the national budget or the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM).

The country project plans emphasized the development and implementation of comprehensive malaria control interventions in the first year, and the evaluation of these piloted interventions in the second year. Following the evaluation, countries will aim to scale up and integrate these interventions into national strategies and policies. Main outcomes and lessons will be shared with member countries and other malaria partners.

⁶ For details, see Annexes 1–6 of the report, *Inception Report of the Project: Strengthening Malaria Control for Ethnic Minorities in the GMS, Chiang Mai, Thailand, July 2006*, Manila, WHO, August 2006.

Each country has adopted community-based approaches to increase access to malaria control services. Each country plan relies on the support of local health personnel, particularly village health volunteers (VHVs) and village health workers (VHWs). Plans call for VHWs and village malaria workers (VMWs) in Cambodia; VHWs and village malaria control volunteers in China-Yunnan; VHVs in the Lao People's Democratic Republic; community-owned resource persons in Myanmar; VMWs and VHVs in Thailand; and VHWs in Viet Nam. Village volunteers are expected not only to provide communities with ITNs, but also to encourage people to use them regularly and to have them impregnated with insecticide at least once a year. Village volunteers also provide communities with RDTs and ACTs to increase access to prompt diagnosis and appropriate treatment according to guidelines. Village volunteers are trained by technical staff from central and local malaria centres. The project teams have revised or adapted malaria control and malaria education training programmes to suit local and ethnic community needs.

Table 1: Summary of country project plans and expected results

Cambodia	Expected results	Indicators
<p>Target villages</p> <ul style="list-style-type: none"> • Kreung ethnic group, Ochum District, Rattanakiri Province • 10 villages • 3725 people <p>Budget</p> <p>The total budget approved for Cambodia is US\$ 46 500.</p> <ul style="list-style-type: none"> • Year 1 US\$ 20 159 • Year 2 US\$ 26 341 <p>NMCP contributions</p> <p>NMCP provides ITNs, rapid diagnostic tests (RDTs) and ACT to the pilot villages.</p>	<p>Result 1: Knowledge on malaria control (refers to biomedical definition of malaria) increased among ethnic minority groups (EMGs) in selected areas</p>	<p>1.1 At least 70% of the whole population and 90% of pregnant women and mothers of children under five in the target villages know how to prevent and cure malaria</p>
	<p>Result 2: Behaviour changed among EMGs in selected areas in terms of malaria control (e.g. use of insecticide-treated nets [ITNs], diagnosis and treatment sought)</p>	<p>2.1 At least 70% of the whole population and 90% of pregnant women and children under five in the target villages correctly used ITNs the previous night</p> <p>2.2 At least 70% of the whole population and 90% of pregnant women and children under five in the target villages seek early diagnosis and treatment (EDAT), i.e. within 48 hours of fever onset</p>
	<p>Results 3: Accessibility, acceptability, affordability, and quality of malaria control services improved at community level in target EMGs</p>	<p>3.1 At least 70% of the whole population and 90% of pregnant women and children under five in the target villages have access to ITNs</p> <p>3.2 At least 70% of the whole population and 90% of pregnant women and children under five in the target villages have access to EDAT</p>
	<p>Result 4: Capacity of health care providers improved on community needs and ways to effectively address specific malaria control needs of EMGs</p>	<p>4.1 Increased capacity of health staff at three levels: national malaria centre, provincial health department and health centre</p> <p>4.2 Increased capacity of 20 volunteers from 10 villages on the malaria control needs of EMGs</p>
	<p>Result 5: Lessons and results of pilot interventions disseminated at country level and shared at regional level, and policy recommendations for scaling up malaria control plans for poor EMGs made available</p>	

China-Yunnan	Expected results	Indicators
<p>Target villages</p> <ul style="list-style-type: none"> • Wa and Lahu ethnic groups in Yuesong Township, Ximeng County, Yunnan Province • Administrative villages (32 natural villages) • 4467 people <p>Budget The total of budget approved for China is US\$ 56 200.</p> <ul style="list-style-type: none"> • Year 1 US\$ 38 602 • Year 2 US\$ 17 598 <p>NMCP contributions NMCP contributes insecticide for bednet treatment and anti-malaria drugs to the project areas. Bednets will be procured with project funds.</p>	Result 1: Knowledge on malaria control increased among EMGs in selected areas	<p>1.1 80% of primary schoolchildren can list at least two malaria signs and name mosquito as vector</p> <p>1.2 60% of villagers aged 16–60 can answer at least three technical questions on malaria</p>
	Result 2: Behaviour changed among EMGs in selected areas in terms of malaria control (e.g. ITNs used, diagnosis and treatment sought)	<p>2.1 Percentage of people using bednets increased 50% compared to the baseline</p> <p>2.2 80% of bednets were treated with insecticide</p> <p>2.3 Percentage of people seeking diagnosis and effective treatment within 24 hours after fever onset increased 50% compared to the baseline</p>
	Result 3: Accessibility, acceptability, affordability and quality of malaria control services improved at community level in target EMGs	<p>3.1 Village health volunteers (VHVs) are established (one VHV per natural village)</p> <p>3.2 Community malaria case management is available in all target natural villages</p> <p>3.2 80% of villagers are satisfied with malaria control services</p> <p>3.4 80% of fever patients use public health services</p> <p>3.5 80% of malaria treatment courses follow national guidelines</p>

Lao People's Democratic Republic	Expected results	Indicators
<p>Target villages</p> <ul style="list-style-type: none"> • Brau-Lave, Taliang and Sadang ethnic groups in Phouvong and Sanxay districts, Attapeu province • Eight villages, covering 454 households • 2400 people <p>Budget The total budget approved is US\$ 46 500.</p> <ul style="list-style-type: none"> • Year 1 US\$ 35 100 • Year 2 US\$ 11 400 <p>NMCP contributions NMCP will contribute ITNs, RDTs and ACT</p>	Result 1: Ethnic minority population in pilot areas receive, accept and understand information, education and communication (IEC) messages	1.1 At least 80% of adults and schoolchildren in the pilot areas understand malaria symptoms and preventive methods
	Result 2: Ethnic minority population in pilot area recognize febrile illness, seek malaria diagnosis and treatment and use ITNs	<p>2.1 50% increase of people using ITNs regularly</p> <p>2.2 20% increase of people seeking care (within 24 hours of fever onset)</p> <p>2.3 100% of falciparum malaria patients receive treatment from the VHV with the complete dosage</p> <p>2.4 10% increase of people using public health services or seeing village volunteers</p> <p>2.5 All children under five and pregnant women sleep under bednets</p>
	Result 3: Capacity of health care providers to address specific needs of malaria control for EMGs is strengthened	3.1 IEC and/or behaviour change communication (BCC) training conducted for health care providers (district-level staff, health centre staff and VHVs)

to those villages		
	Result 4: Lessons and results of pilot interventions disseminated at country level and to the relevant stakeholders, and policy recommendations for scaling up malaria control plans for poor EMGs made available	4.1 Number of proposed sites for scale-up 4.2 Number of stakeholders attending final presentation meeting

Myanmar	Expected results	Indicators
Target villages <ul style="list-style-type: none"> •Shan, Lahu and Akha ethnic groups in Mong Tone, Mong Hsat and Tarchileik townships, Eastern Shan State •30 villages •15 000 people Budget The budget approved for Myanmar is US\$ 72 000. <ul style="list-style-type: none"> •Year 1 US\$ 44 000 •Year 2 US\$ 28 000 Contributions Myanmar will procure necessary malaria control commodities for the target population (nets, insecticide, drugs) with project funds	Result 1: Strengthened capacity of Vector-Borne Disease Control (VBDC) and the basic health staff on planning, implementing, monitoring and evaluating malaria prevention and control services for “national races” (i.e. EMGs)	1.1 Availability of operational manual for malaria prevention and control at township level 1.2 Percentage of basic health staff surveyed and/or supervised who treat malaria according to national guidelines 1.3 Percentage of health facilities without stock-out of drugs for more than a week within the last three months prior to the monitoring visit and/or survey
	Result 2: Quality community-based malaria prevention and control services for “national races” in Tarchilek District established	2.1 Percentage of trained community-owned resource persons who deliver malaria control services in accordance with the operational guidelines 2.2 Percentage of households who own bednets who had their nets treated 2.3 Percentage of target population who slept under ITNs and/or LLINs every night during the last seven nights prior to the survey
	Result 3: Lessons and results of pilot interventions disseminated at country and regional level, and policy recommendations for scaling up malaria control for national races available	3.1 Report on the results and lessons on pilot interventions for malaria prevention and control disseminated widely, including publication on the Internet 3.2 Draft policy recommendations by Malaria Technical Advisory Group on malaria prevention and control among “national races” in Myanmar available

Thailand	Expected results	Indicators
Target villages <ul style="list-style-type: none"> •Karen ethnic group in Sopmoei and Muang Districts, Mae Hong Son Province •five villages, covering 525 households •2400 people Budget The budget approved for Thailand is US\$ 40,250. <ul style="list-style-type: none"> •Year 1 US\$ 30,000 •Year 2 US\$ 10,250 NMCP contributions The NMCP will contribute ITNs and anti-malaria drugs to	Result 1: Ethnic minority populations in pilot areas have increased awareness of appropriate malaria control practices and utilize home and community-based approaches for malaria control	1.1 80% of target population have good knowledge on malaria prevention and control
	Result 2: Ethnic minority populations in pilot areas apply vector control measures and properly use ITNs	2.1 80% of population have and use ITNs
	Result 3: Increased access to early diagnosis and prompt effective treatment in communities	3.1 80% of malaria cases receive drug treatment within 24 hours of onset of fever
	Result 4: Capacity of health care providers improved on community needs and ways to effectively address specific malaria control needs of EMGs	4.1 Local health services have implementation plan on malaria control in EMGs in target area
	Result 5: Lessons and results of pilot interventions disseminated at provincial level and shared at country and regional level, and policy recommendations for scaling up malaria control plans for poor EMGs made available	5.1 The partnerships have an implementation plan on malaria control in EMGs in target area

the project villages.		
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Viet Nam	Expected results	Indicators
Target villages <ul style="list-style-type: none"> • Raglai ethnic group in Khanh Nam and Khanh Trung Communes, Khanh Vinh District, Khanh Hoa Province. • 193 households • 4198 people Budget The budget approved for the Viet Nam team is US\$ 46 500. <ul style="list-style-type: none"> • Year 1 US\$ 27 245 • Year 2 US\$ 19 255 NMCP contributions NMCP provides ITNs, hammock nets, RDTs and ACT to the pilot villages.	Result 1: Knowledge on malaria control increased among EMGs in selected areas	1.1 Increase by at least 30% of villagers who recall at least two messages related to malaria prevention
	Result 2: Behaviour changed among EMGs for malaria control in selected areas (ITNs used, diagnosis and treatment sought)	2.1 100% bednet coverage 2.2 90% of villagers properly using ITNs 2.3 90% of fever cases go to commune health centres (CHCs) or VHWs
	Result 3: Access of EMGs to good quality community-based malaria control measures improved in selected areas	3.1 70% fever cases receive slide test and/or RDT 3.2 100% confirmed malaria cases receive appropriate treatment
	Result 4: Capacity of health care providers improved on community needs and ways to effectively address specific malaria control needs of EMGs	4.1 100% VHWs and CHC staff can correctly provide services related to malaria prevention and treatment
	Result 5: Lessons and results of pilot interventions disseminated at country level and shared at regional level, and policy recommendations for scaling up malaria control plans for poor EMGs available	5.1 Strategy on malaria control for EMGs developed 5.2 Plan for application of results of this project for other EMGs is developed

4. Project implementation process

4.1 Project inception and First Advisory Committee Meeting

The First Advisory Committee Meeting was organized on 25-26 November 2005 in Vientiane, Lao People's Democratic Republic to launch the Project and define its interventions. The meeting was attended by all malaria programme managers with the exception of the programme manager from Myanmar, who could not attend due to the short notice. During this meeting, participants decided to pursue the same ethnic groups targeted during the previous ADB-WHO supported IEC project. The malaria situation in each country was shared and gaps in malaria control for ethnic minorities and hard-to-reach populations were identified. It was decided to put more emphasis on education and social mobilization to strengthen community-based malaria prevention and control activities. Monitoring and evaluation were also identified as important components to track interventions and promote the use of measurable indicators able to assess outcomes.⁷

4.2 Second Advisory Committee Meeting

The Second Advisory Committee Meeting took place from 8 to 10 March 2006 in Chiang Mai, Thailand, to finalize and approve six country pilot field studies and the implementation budget. The total budget made available for field implementation in the six countries was US\$ 308 650. The general principle was that this relatively small budget was aimed to only cover extra activities that address specific ethnic minority challenges, with remaining activities and commodities to be covered by national or other external funds such as the GFATM. It was decided that Myanmar would receive more funds from the Project than other Mekong countries

⁷ For details, see the First Advisory Committee and Inception Meeting Report, November 2005.

(US\$ 72 700) due to the lack of external support, while China would get US\$ 56 200 and others approximately US\$ 46 000 each (see table in Annex 1). All national programmes agreed to provide targeted villages with essential deliverables such as ITNs/LLINs, RDTs and ACTs. In all countries, village health volunteers were identified as key persons to deliver services in the community and report to the health care level above. Participants decided to organize training workshops to strengthen VHV capacity on bednet (re)impregnation, use of RDTs to diagnose falciparum malaria, prescription of appropriate dosage and/or regimen of ACT and referral decisions. The training package included communication skills to educate and mobilizing communities for malaria prevention. Some countries also decided to establish community-based monitoring systems to assess progress made in malaria control. It was agreed that lessons from the project implementation would be used to adapt the strategy to be further scaled up through national control programmes with additional partners' support. The country project plans are attached in Annex 2 and details of the implementation areas in Annex 3.

4.3 Regional training workshop

Immediately following the Second Advisory Committee Meeting, a training workshop on quantitative and qualitative data collection for monitoring and evaluation of control interventions was organized in Chiang Mai from 13 to 17 March 2006. The main objective was to sharpen participants' skills in conducting qualitative and quantitative surveys (e.g. household surveys, individual interviews, focus group discussions). Draft research methodological protocols were developed, sample sizes were defined and participants were trained to analyse data. Jane Bruce introduced a household survey questionnaire and indicators used in Mozambique, and advised country teams to adapt these to suit the local situation.⁸ A draft focus group discussion protocol was developed for each country to be finalized and used at the field level. All participants had a field practice session for data collection in a Karen village outside Chiang Mai.

A framework for project costing was introduced during the training workshop. Jo Lines presented a simple format to record the financial cost of the project implementation, taking into account specific ADB-WHO project funds as well as any contributions from the NMCP and others.

4.4 Programme review and Third Advisory Committee Meeting

The Third Advisory Committee Meeting was held in Manila from 1 to 2 December 2006 in conjunction with a symposium of the Asian Collaborative Training Network for Malaria (ACTMalaria). Meeting participants included malaria programme managers and technical focal persons from six member countries, malaria partners in the GMS and WHO staff. The aim of the meeting was to update participants, ADB experts and partners on the Mekong project implementation, achievements and lessons. Participants reviewed project targets with recommendations and reviewed the M&E sections of the plans of action to identify the needs for technical assistance. Country project implementation plans for 2007 were carefully revised and accepted by the Advisory Committee, and recommendations were made for the improvement of control interventions. It was noticed that compared to other countries, project implementation in Myanmar was seriously delayed.

⁸ Detailed household survey questionnaire is available on request.

4.5 Other venues for project discussion and information sharing

All member countries agreed to share project information through the ACTMalaria website (www.actmalaria.org). Project information and materials generated from the previous IEC project are also posted on this website.

During the ACTMalaria symposium, 28–30 November 2006, ACTMalaria, ADB and WHO jointly advocated malaria control for ethnic minorities. Malaria control strategies, plans and outcomes for ethnic minorities from the six countries were presented and discussed. Project teams also learnt about malaria control programmes from Malaysia and the Philippines. This meeting highlighted the need for NMCPs to put more emphasis on ethnic minorities and hard-to-reach populations in malaria-prone areas.⁹

Information on the Project is also shared through the Communication Initiative website (www.comminit.com/experiences.html). This website is popular among social scientists and public health personnel who are interested in human behaviour and disease control.

A Regional Workshop for Malaria Programme Managers was organized in Manila from 3 to 7 October 2006. Participants included malaria programme managers and senior technical staff from 12 countries in the Western Pacific Region and the GMS (including Myanmar and Thailand), and representatives from the United States Agency for International Development (USAID), ADB, Australian Agency for International Development (AusAID), United Nations Children's Fund (UNICEF), GFATM, Management Sciences for Health (MSH), pharmaceutical companies, producers of ITNs and LLINs, as well as WHO staff. The aim of the meeting was to review the malaria situation and national plans, and identify specific challenges to be addressed in the Western Pacific Region to achieve regional goals. The malaria control project for ethnic minorities in the GMS was presented to all participants. Although there was not enough time to discuss project outcomes in detail, participants recognized that their programmes must pay special attention to ethnic minorities, migrant workers (mobile populations) and hard-to-reach populations are vulnerable groups.

USAID organized the Mekong Malaria Review Workshop from 7 to 8 November 2006 in Chiang Mai, Thailand. The purpose was to take stock of outcomes from the USAID malaria control assistance strategy in South-East Asia from 2000 to 2006, to analyse gaps, and to draft from the donor's perspective the strategic priorities for USAID support over the next five years. Participants came from USAID, International Organization for Migration (IOM), WHO, MSH, CDC Atlanta, Naval Medical Research Unit (NAMRU), Japan International Cooperation Agency (JICA), Armed Forces Research Institute of Medical Sciences (AFRIMS), Kenan Institute Asia (KIASia) and various organizations supported by USAID. Groups vulnerable to malaria (e.g. ethnic minorities and mobile populations including internal and international migrant workers) were considered as being among top priorities for further support. Pricha Petlueng provided a presentation on ethnic minorities in the GMS, which included a background of the malaria situation and implications for malaria control among ethnic minorities, control strategies, outcomes and points for discussion. It was recommended during the group discussions that vulnerable populations at risk of malaria, especially migrants, ethnic minority groups and pregnant women, should be targeted through appropriate malaria control strategies and comprehensive services.¹⁰

⁹ Country presentations are available on request.

¹⁰ Presentations and recommendations are available on request.

5. Project achievements

All countries except Myanmar initiated their plans of action in July 2006 after funds were made available by the WHO Regional Office for the Western Pacific at the end of June 2006. Myanmar received the first instalment in November 2006, following approval of the project plan by the Advisory Committee in July 2006, and approval of the grant agreement in September 2006.

Strategic field interventions in 2006 focused on (1) conducting baseline surveys, (2) revising and producing IEC materials, (3) training village volunteers and local health staff to diagnose and treat malaria patients, and (4) mobilizing communities for malaria prevention and control. Stakeholder meetings were one of the early activities in 2006.¹¹

Almost all countries have conducted household surveys, focus group discussions or parasitological surveys to collect baseline data. The impact of interventions will be gauged by slide and/or RDT positivity rates over time in fever cases and/or in asymptomatic people. The results of these tests are considered accurate because quality assurance methods are in place to ensure quality microscopy and RDT diagnosis.¹² Viet Nam, the Lao People's Democratic Republic and Myanmar have conducted mass blood surveys in addition to regular information on slide positivity rates in febrile patients gathered through monthly reporting forms generated by volunteers using microscopy or RDTs. Important findings and results from such surveys and routine data collection are summarized by country in the following sections. Preliminary findings from country baseline surveys are summarized in Table 2.

¹¹ Summary of project activities in December 2006 are available on request.

¹² *Malaria Light Microscopy: Towards a Culture of Quality*. Report of a joint SEARO/WPRO workshop on quality assurance of malaria light microscopy, Kuala Lumpur, 18–21 April 2005.

Table 2: Findings from baseline surveys

	Cambodia	Yunnan/China	Lao People's Democratic Republic	Myanmar	Thailand	Viet Nam
Estimated number of people per net	1.3 (3725 persons per 2730 nets)	6.8 (3650 persons per 535 nets)	1.9 (631 persons per 317 nets)	3.0	4.5 (2447 persons per 500 nets)	2.1 (2278 persons per 1038 nets)
Percentage of households with at least one net	29.8%	32.7% (312 out of 954)	>95.0%		35.9% (52 out of 145)	99.2% (500 out of 504)
Percentage of people sleeping under ITN	24.2%	7.7% (282 out of 3650 people)	67.0%			86.3%
Percentage of sick people seeking treatment within 48 hours	31%	15.9% (79 out of 283 sick people seeking treatment within 48 hours) 56.9% (283 out of 497 sick people seeking treatment from public health facilities)	26%			71.5% (28.6% seek treatment within 24 hours; 42.9% seek treatment between 24 and 48 hours)
Percentage of people without adequate knowledge of malaria transmission and prevention	>80%	12.1% (98 out of 807)	86%		>90%	97%
SPR (%) in fever cases through microscopy	none	7.2% (62 out of 862 slides; 58 <i>P.v.</i> , 4 <i>P.f.</i> ; Aug 2005–Feb 2006) 1.6% (18 out of 1127, Jan–Jul 2006) 3.2% (28 out of 863; 27 <i>P.v.</i> , 1 <i>P.f.</i> ; Aug 2006–Feb 2007)	10.3% (21 out of 203, Feb 2007)		<1% (23 out of 3831, Jul–Nov 2006)	4% (1 out of 25, Mar 2007)
RDT positivity rate (%) in fever cases	62% (136 out of 218, Jun–Sep 2006) 38% (146 out of 384, Oct–Dec 2006)	RDT not used	27% (196 out of 725, Sep 2006–Mar 2007)	<1% (Sep–Oct 2006)		RDT use not reported
SPR (%) from parasitological surveys	none	none	15.2% (73 out of 480, Oct 2006)	4.9% (64 out of 1307, Aug 2006)		<1% (5 out of 801, Jun 2006)

ITN, insecticide-treated net; *P.f.*, *P. falciparum*; *P.v.*, *P. vivax*; RDT, rapid diagnostic test; SPR,

5.1 Cambodia

5.1.1 Launching meeting

The Cambodian team launched their project in June 2006 with a stakeholder and advocacy workshop. Participants included provincial health departments, chiefs of concerned villages, and international nongovernmental organizations such as Health Unlimited (HU) and International Cooperation for Cambodia (ICC).

5.1.2 Baseline data

A baseline survey was conducted in July 2006. The team adapted standardized household survey questionnaires introduced during the qualitative and quantitative research training workshop in March 2006 in Chiang Mai. A set of questions for focus group discussions was developed with the assistance of the project malaria research experts. The survey was conducted in 121 households in four target villages. It was found that 86% of households under investigation have at least one bednet, but only 30% of households have one ITN. Of the total respondents, 62% sleep under bednets, 24% sleep under ITNs, more than 80% have adequate knowledge on malaria prevention, and only 33% would seek malaria treatment within 48 hours of fever onset.

A parasitological survey was conducted using blood slides and RDTs in fever cases, with data collected from the monthly reports of village malaria workers. From June to September 2006 (the rainy season), 218 people with fever came to see VMWs and were tested with RDTs (Paracheck®). Of these patients, 136 (62%) tested positive for *P. falciparum* malaria. Children under five years of age accounted for 33 of the positive cases (24%), which is in correlation with the demographic proportion of children under five in the general population (estimated at around 20%). Hence, children in the area are equally at risk as adults.

5.1.3 Education and communication

Educational and communication materials were produced in September 2006. Office equipment for the project team and equipment for VHVs were procured from September to November 2006.

5.1.4 Training sessions

From August to September 2006, various training workshops were organized on bednet impregnation, the use of RDTs for diagnosing malaria, administering ACT for treatment, and improving skills in education and communication. Ten VHVs, 10 VMWs and two health centre staff were trained in malaria education and communication skills.

5.1.5 Village volunteers

Since October 2006, village volunteers have been implementing malaria prevention and control measures including the education and mobilization of communities. Monitoring and supervision activities by health personnel and project team members have also been carried out since October.¹³ Monthly VHV and VMW meetings are organized at the Ochum district health centre. All volunteers attend the meetings to report on the number of malaria cases, RDTs and ACTs used, the number of people transferred to health centres, the number of families and forest-goers observed on bednet usage, the number of health education sessions conducted with specific topics, and malaria issues raised by the communities and local authorities.

¹³ Report of Cambodia project activities and achievements, December 2006, is available on request.

5.1.6 Contribution from NMCP to the Project

The NMCP contributed 2000 ITNs, 960 extra bednets to forest-goers, 606 RDTs and 306 ACTs to the targeted villages in 2006.

5.2 China, Province of Yunnan

5.2.1 Launching meeting

A stakeholder and advocacy workshop was held in July 2006. Twenty-two participants from district, county and township levels discussed the recruitment and training of 18 village health workers (VHWs) and village malaria control volunteers (VMCVs); the responsibilities of township governments in coordinating project implementation; and the roles of villages, Yunnan Institute of Parasitic Diseases (YIPD) and Ximeng CDC in project implementation.

5.2.2 Baseline data and mid-term survey

Baseline surveys were conducted from August to September 2006 in 960 households among targeted villages. Three hundred and forty two (342) serum samples were randomly collected from persons who had fever episodes during the last year. Results are not yet available. From January to September 2006, 1127 febrile patients were tested by microscopy for malaria parasites: 18 (1.6%) were found positive (17 *P. vivax* and 1 *P. falciparum*).

The team from Yunnan province conducted a project mid-term evaluation in January 2007. The preliminary results showed that knowledge of people on malaria control and prevention has increased from 12% to 54%; the proportion of people sleeping under a bednet has increased from 16% to 77%; ITN ownership has increased from 48% to 92%; the proportion of people who have come to village volunteers for malaria diagnosis has increased from 23% to 43%; and the proportion of people who got treatment for malaria within 48 hours has increased from 58% to 71%. The project manager demonstrated positive outcomes from the interventions in place.

5.2.2 Education and communication

A number of educational materials—posters, flipcharts, primary schoolchildren manual, story booklet and guidelines—were reproduced in July 2006. Following a training workshop in August, VHWs and VMCVs have been providing malaria education to large and small groups. Up to November, an estimated 500 families had received malaria education. Malaria education sessions in primary schools have been conducted since September 2006. It is estimated that 264 children have taken part in this activity.¹⁴

5.2.3 Training sessions

Several training workshops on malaria control and communication skills were convened for 18 VHWs and VMCVs, 10 teachers, 20 students and seven health staff in August. In September 2006, 18 VHWs and VMCVs were trained on bednet impregnation.

5.2.4 Procurement

Three thousand bednets were procured with US\$ 5625 from the project budget. Funds collected from the subsidized sale of bednets to villagers will be used to purchase 1200 more bednets.

¹⁴ Report of China-Yunnan project activities and achievements, December 2006, is available on request.

5.2.5 Contribution from NMCP

The programme manager is recommending the use of microscopy for malaria testing. Antimalarial drugs from the NMCP will be prescribed according to Chinese guidelines.

In Ximeng county, the township hospital staff have conducted regular monitoring and supervision visits to strengthen VHW and VMCV capacity to provide effective malaria prevention and control measures according to the guidelines.

There has been an extended impact on the malaria control programme in Yunnan, where the GFATM round 6 grant proposal was developed and approved based on the *Strengthening Malaria Control for Ethnic Minorities in the GMS Project*. The GFATM proposal adopts a community-based approach, involving village volunteers and local health personnel to control malaria.

5.3 Lao People's Democratic Republic

5.3.1 Launching meeting

The first consensus and planning meeting took place in June 2006. Participants included four central-level staff, five provincial staff and five staff from the two concerned districts. The project team accepted and adopted the two-year plan recommended during the Second Advisory Committee Meeting in Chiang Mai in March 2006.

5.2.2 Baseline data

A baseline household questionnaire, which the team began to develop in June, was completed in August. Completion of data entry was effective in November 2006. Preliminary findings were presented during the programme review in December: 15.2% of respondents (73 out of 480) had malaria; 100% bednet coverage was noticed based on the total of people/nets, but only 65% of households had enough bednets for all family members; 80% of interviewed people had accurate knowledge on malaria control and prevention; and 61% of people sought malaria treatment from village volunteers.

In December 2006, the national team conducted a household survey to confirm baseline results. While the baseline survey showed 100% bednet coverage in selected villages (households with at least one ITN), the individual household survey showed that 156 out of 422 households (37%) did not have enough bednets to cover all family members and that seven families had no bednets (as per standardized calculation of an average of 2.5 persons per bednet). It is imperative that indicators are further defined in order to consistently measure ITN coverage, especially in ethnic populations and among forest-goers living and/or working in malaria-endemic areas.

Data collected by VHWs showed a high proportion of malaria infection in febrile cases. Out of 725 patients, 196 (27%) tested positive with RDT from September 2006 to March 2007.

5.2.3 Education and communication

With funds from the project budget, IEC materials were reproduced (US\$ 3000) and equipment was procured (US\$ 2000) from June to August 2006. Ten bicycles, 16 carried bags and stationery were purchased for VHWs. Office supplies and communication equipment were bought for district and provincial offices as well as for the Centre for Malariology, Parasitology and Entomology (CMPE).

5.2.4 Training sessions

In July, an IEC training workshop was organized in two locations to increase local staff capacity for conducting effective malaria education and mobilization campaigns. Eight village heads, eight members of Lao Women's Union, 15 VHVs and seven teachers were trained. Training workshops were conducted in August 2006 to strengthen VHV capacity in using RDTs and ACTs.

5.2.5 Village volunteers

Village volunteers began providing malaria diagnosis and treatment services in October 2006. Monthly reports on malaria patients and the use of RDTs and ACTs have been sent to district and provincial teams since then. Village volunteers found it difficult to conduct health education sessions because many people stayed overnight outside the villages and village leaders gave limited support to their activities. The central level assisted the district and provincial teams to mobilize communities in December 2006. Results from village volunteers' reports show that community knowledge in malaria control has improved.

5.2.6 Contribution from the NMCP

The first field monitoring and supervision visit did not take place until December 2006 because of unnecessary delays in the release of funding from the Ministry of Health to the CMPE. The central team led the provincial and district teams, including representatives from provincial health department, to visit target villages and supervise the work of the VHVs. The central team advised the district team on how to monitor and supervise VHVs, what forms to use for data collection and reporting, and how to use collected data. Lessons from this visit have been used to adapt the monitoring form and develop further guidelines and job aids for VHVs, district and provincial health staff.¹⁵

In 2006, the NMCP distributed 842 bednets and 18 litres of insecticide for bednet impregnation to the eight targeted villages. Based on the household survey of eight villages in December 2006, 718 additional bednets need to be provided in 2007 to reach the 100% ITN coverage (based on 2.5 persons/net), which would also cover around 197 people who go into the forest regularly.

5.4 Myanmar

The Myanmar project was approved in November 2006. Funds were released to the Ministry of Health that same month. A request for a no-cost extension from December 2006 to May 2007 was submitted to and accepted by the WHO Regional Office for the Western Pacific. All proposed activities were discussed and revised during a two-week WHO country visit in Tachileik in November 2006.¹⁶

5.4.1 Launching meeting

The project implementation team in Tachileik in Eastern Shan State conducted stakeholder meetings in three townships in October and November. District peace and development councils, health staff, Vector-Borne Disease Control (VBDC), the police and local nongovernmental organizations (NGOs) participated in the various meetings.

5.4.2 Baseline data

Although representatives from Myanmar did not participate in the qualitative and quantitative data collection training workshop in March 2006, all documents and

¹⁵ Report of Lao project activities and achievements, December 2006, is available on request.

¹⁶ Report is available on request.

household survey questionnaires were sent to the Myanmar project team. The VBDC team adapted and translated the household survey questionnaire into Myanmar language in October. However, due to a change in the focal point and field difficulties, data collection was postponed to March 2007, before the start of the malaria season. An evaluation of interventions will take place in November 2007.

As part of the baseline survey, a total of 1307 blood slides were taken from villagers in Tachileik and Mong Hsat townships in August 2006. Results showed 64 (4.9%) positive malaria cases (61 *P.vivax* and three *P.falciparum*). These results are consistent with RDT positivity rates in the selected villages visited, where the RDT positivity rate is less than 1%, arguing for use of the more expensive combined *P. falciparum* /*P. vivax* tests rather than the currently used *P. falciparum* test, in light of high *P. vivax* prevalence.

5.4.3 Communication

The Myanmar team is reproducing 50 flipcharts and 1000 posters (two types) covering 50 villages. Procurement of computers and three motorcycles is underway.

The development of a *Practical Guide on Community Empowerment of Malaria Prevention and Control (Learner's Guide and Trainer's Guide)*, which includes training curriculum and materials for VBDC and BHS staff, was commissioned to the Save the Children Alliance in October 2006. The manual was completed in February 2007 and is being field-tested.¹⁷ The VBDC is revising the training curriculum and materials that were used during training sessions for community-owned resource persons in December 2006; they were completed in February 2007.¹⁸

5.4.4 VBDC inputs

In addition to contributions of time from central and local VBDC staff, the NMCP is providing insecticide for bednet dipping, RDTs and ACTs needed for the targeted villages, and logistical support for implementation of community-based interventions worth US\$ 30 000.

5.5 Thailand

5.5.1 Launching meeting

The Thailand project team introduced the project to the VBDC regional offices in Chiang Mai and Mae Hong Son in September 2006.

5.5.2 Baseline data

The baseline survey was conducted in five targeted villages (two villages in Muang and three villages in Sopmoei Districts) in September 2006. Preliminary findings were presented during the project review meeting in Manila in December 2006. ITN coverage was estimated at about 50%. The team is currently writing the survey report.

Results from parasitological surveys carried out from July to November 2006 showed that among the 3831 patients seeking treatment by village volunteers, 23 (0.6%) were microscopically positive for malaria (14 *P.falciparum* and nine *P.vivax*)

¹⁷ *Practical Guide on Community Empowerment of Malaria Prevention and Control* is available on request.

¹⁸ Report on Myanmar project activities and achievements, December 2006, is available on request.

5.5.3 Communication and education

In September 2006, the team conducted a post-test assessment of malaria educational materials developed during the previous IEC project. Results showed that materials used were suitable for the targeted populations. Thanks to the project inputs, 2500 calendars, 2500 posters, 2500 brochures, 1000 leaflets and 2500 sets of jigsaw puzzles have been reproduced. Thirty copies of the guideline for disease management have been produced and distributed, to be used either at the community level or in mobile clinics.

5.5.4 Training

Several training workshops were organized. In October, 13 malaria staff and four non-health worker employees were trained in malaria diagnosis (using microscopes) and in providing treatment; 1153 mosquito nets were distributed. Also in October, a total of 100 local people (57 volunteers, two village headmen, six headmen, 21 village committees, seven local organizations and seven teachers) were trained on malaria prevention and control and on mobilizing communities for behavior change.

5.5.5 Programme inputs

Before the Project began, community malaria clinics (CoMC) in selected villages were providing malaria diagnosis and treatment. Due to a government budget shortage, CoMCs in the three targeted villages in Sopmoei district were closed. In place of them, the project team set up mobile clinic teams in September to conduct case-finding. With project support, in January 2007, the team decided to re-establish CoMCs in the three villages. This approach is strengthening malaria control in these remote villages. The local administration is expected to earmark additional funding to sustain support for village volunteers running the clinics. Due to limited time and difficulties in training volunteers in microscopy and maintaining quality, the VBDC team trained village volunteers in the proper use of RDTs (*P. falciparum* only due to budget constraints), locally made, to diagnose malaria parasites rather than using microscopes, with the important limitation that *P. vivax* infections will no longer be identified.

The NMCP contributed 500 bednets and 1000 sachets of insecticide for bednet (re)impregnation. A total of 1140 bednets have been impregnated, which has increased ITN coverage to nearly 100%, reaching 98% coverage of the total population in the five selected villages.¹⁹

5.6 Viet Nam

5.6.1 Launching meeting

In June 2006, the Institute of Malariology, Parasitology and Entomology – Quy Nhon (IMPE-QN) organized a stakeholder meeting in Khanh Vinh district. There were 41 participants from provincial health services; provincial ethnic minorities committee; district health office; Women's Union; provincial culture and information department, broadcasting; training and education department; commune People's Committee; and village health workers. All participants accepted and agreed to support the malaria control project for the Raglai ethnic minority group in the two selected communes.

¹⁹ Report of Thailand project activities and achievements, December 2006, is available on request.

5.6.2 Baseline data

Baseline data collection started after the stakeholder meeting. Representatives from 500 households in Khanh Nam and Khanh Trung communes were interviewed. Two rounds of focus group discussions were carried out to collect in-depth information to guide the project implementation. Eight hundred blood slides were taken during the interviews at the household level. Monthly blood tests for malaria are performed by village health workers either in fever cases or at random in asymptomatic cases to monitor the malaria situation. The SPR in fever cases is less than 1%. Main findings were presented at the programme review meeting in December 2006.

5.6.3 Communication and education

IMPE-QN has procured two TV-video sets, 12 handheld speakers (megaphones) and 14 medical bags (containing RDTs, anti-malarial drugs and other essential drugs such as paracetamol) for VHW and CHC staff. IMPE-QN reproduced 6000 posters, 1200 flipcharts, 50 video clips and 50 audio cassette tapes by October and delivered to them to VHWs in November 2006.

5.6.4 Training sessions

Several training workshops have been organized for VHW and CHC staff by IMPE-QN. In September 2006, 25 participants consisting of VHWs, CHC staff, and district health office staff were trained on malaria control and prevention. A follow-up training workshop on communication skills was conducted for 19 participants: four CHC staff, seven VHWs, two primary school teachers, two members of the Women's Union, two local staff responsible for the speaker system and two local administrators.

The project team has identified the need for RDTs, ACTs and specific prevention measures for forest-goers who are recognized as the most at risk in the targeted villages. Stand-by treatment is a strategy developed by the national programme to be used in the forest environment. In August and September 2006, IMPE-QN provided 300 bednets, 200 blisters of antimalarial drugs and 360 RDTs to forest-goers. One hundred and twenty hammock nets were delivered to recognized forest-goers in November 2006. All malaria control commodities were made available through IMPE-QN's budget.

Monthly monitoring and supervision visits and meetings are performed by IMPE-QN staff at the commune level. VHWs are also regularly visited by commune health staff. The project team has developed specific "village monitoring forms" which include information on malaria cases, the number of RDTs and ACTs used, the usage of bednets including how they are actually used in households and by forest-goers, and the topics of health education sessions undertaken.²⁰ Monthly meetings are organized at Khanh Vinh district health office to collect data and review the situation²¹.

In January 2007, the IMPE-QN team awarded two VHWs for their recognized performance on the above procedures. This approach is perceived as an encouragement to increase VHW performance and strengthen their commitment to provide quality malaria control and prevention services.

²⁰ Viet Nam village malaria situation record form

²¹ Report of Viet Nam project activities and achievements, December 2006, is available on request.

The Viet Nam team is sharing project information with malaria partners. The project was introduced on the IMPE-QN website in Vietnamese but is also available in English (www.impe-qn.org.vn/impe-qn/vn/portal/index.jsp). The information includes the project background, objectives, strategy, data from baseline survey and outcomes.

6. Analysis of operational costs

Included in the project outcomes is an analysis of the additional or marginal cost of providing adequate malaria control to remotely living ethnic minorities, as well as integrating the interventions into national malaria control programmes and scaling them up. This analysis would include costs for routine activities (1) to perform essential tasks of the programme (supervision, surveys and reporting), (2) to make available specific materials (adjusted IEC materials and communication systems) and commodities (RDTs and ACTs), (3) to maintain skilled village health workers, and (3) to make quick referrals possible as part of a performing health care system. The costing exercise will assist programme managers in developing proposals and in convincing local and regional authorities to earmark additional funds to sustain these interventions. Since there is a lack of expertise in health economics, it was recommended that a health economist should be hired to assist countries in assessing these costs. This exercise is expected to be carried out from July to September 2007.

7. Technical inputs into the project design, implementation and follow-up

Technical support has been provided to member countries since the planning stage. The project experts (see Section 2.5) and project coordinator have maintained a regular exchange of information through e-mails, phone calls, county visits and workshops involving representatives from Mekong countries. Project implementation and technical issues have been expressed and discussed through e-mails and phone calls. Country teams have submitted monthly updates to the project coordinator who has set up a database to track and consolidate the information.

Dr Jane Bruce and Dr Holly Williams have closely assisted country teams with the complex process of conducting baseline surveys. Household questionnaires and qualitative research protocols were finalized, databases were set up, country staff were trained in computerizing data and assistance was provided to the teams to analyse data generated from the field. Cambodia, China-Yunnan, the Lao People's Democratic Republic, Thailand and Viet Nam presented their findings during the programme review meeting in December.

Several technical supervision visits were carried out during 2006 to assist and advise country teams on project implementation. The visits are summarized below.

- **Viet Nam.** Pricha Petlueng, project coordinator, visited in June 2006 to assist the team in introducing and advocating the project to different partners in Khanh Vinh district, Khanh Hoa Province. Meeting participants included VHWs, commune and district health staff, provincial malaria staff, district and commune People's Committees, Women's Unions and teachers. The participants were divided into groups to discuss how to strengthen malaria control in targeted villages. Following the meeting, the team started to conduct the baseline survey. The commune health staff and VHWs performed

household interviews and collected blood smears for malaria parasite diagnosis. The project coordinator observed a focus group discussion with forest-goers; only three participants showed up. It was suggested that the team re-conduct the group interview later on. The second round of focus group discussions was conducted the following month. It was also suggested that the team facilitate rather than drive the group discussion, enabling the participants to express themselves.

- **Cambodia.** In June 2006, Pricha Petlueng assisted the Cambodian team to plan the project interventions. Of the 10 selected villages, five have VMWs to provide malaria diagnosis and treatment; the other five have VHVs to refer malaria patients, educate community members for malaria prevention and participate in net dipping. It was suggested that the team clarify the roles and responsibilities of VHVs and VMWs in the context of the project. Training sessions with village volunteers should put emphasis on planning and community mobilization.
- **Cambodia, Lao People's Democratic Republic and Viet Nam.** In July 2006, Dr Holly Williams and Dr Jane Bruce visited these three countries to assist in baseline data collection. Dr Bruce trained a small group of people in each country on how to use Epidata software for data entry and analysis. A database was also developed for each country based on country indicators during the visit and was finalized the following month through exchange of e-mails. Dr Williams prepared the Lao team for conducting focus group discussions by using a protocol prepared during the workshop in March 2006. Dr Williams assisted the Cambodia and Viet Nam teams in analysing data from their focus group discussions. It was found that all countries have limited understanding of how to capture and analyse qualitative data and how to use findings to reorient planning activities. In addition, there was disconnected information from qualitative and household surveys and a lack of capacity for clear reporting in English. It was recommended that countries should receive extra epidemiological and/or statistical support at field level.
- **Lao People's Democratic Republic.** In late August 2006, Dr Charles Delacollette and Pricha Petlueng visited the project area in order to observe the training workshop for volunteers in case management, to monitor the use of RDTs and recording forms and to assess the malaria control situation with district and central teams. Discussion took place with various health staff to improve supply chain mechanisms (by stocking up appropriate number of RDTs, ACTs and insecticide for bednet impregnation), to carry out regular supervision activities by district staff, especially in the rainy season when access to some of the targeted villages is very difficult, and to discuss items in reporting forms. It was also suggested to improve the overall feedback reporting system (on number of RDTs and ACTs used plus the results) from volunteers to the district and central levels, which does not seem to be taken seriously by the central level. Suggestions were made to improve malaria prevention for forest-goers: (1) improving the capturing of information in patients who temporarily travel outside villages; (2) finding more suitable alternative approaches to ITNs (e.g. treated blankets, impregnated clothes, and repellents); and (3) exploring rational use and efficacy of stand-by diagnosis and treatment kits for people working in remote locations. Dr Delacollette also worked with the project coordinator to devise a form for tracking activities, timeframe, achievements and funds spent. The form was tested with staff in Attapeu and sent to all member countries for their feedback.

- **China-Yunnan.** In October 2006, Dr Jo Lines conducted a supervision visit to provide technical advice to the project implementation team. It was found that the overall project implementation rate is on track but data from the baseline survey was far from completed, with deviation from the plan. It was suggested that the Chinese team use the agreed standardized questionnaire for their household survey. Unified objectives and more defined indicators were suggested for countries to have the same interpretation and share tools and results when the project is achieved.
- **Myanmar.** In November 2006, Dr Charles Delacollette and Pricha Petlueng visited Myanmar to assess the malaria situation in the project area and revise the implementation plan with the focal point. By the time of the visit, the team had not started implementing the project due to the late arrival of funding. Malaria prevalence in the targeted villages has been decreasing, which calls for more integration of the work of malaria health volunteers with other health programmes such as acute respiratory infection and diarrhoea disease control. Therefore, the roles and functions of village volunteers, who are the primary drug providers for malaria, should be reviewed accordingly. The team was developing a training manual entitled *Empowerment of communities for malaria control*, which needed to be completed before the village volunteers' training in March 2007. Since many malaria cases are recorded among people travelling and working outside the village setting, the surveillance/reporting form should include additional information on patients' travels (where and for how many days). It was suggested to explore alternative personal protection for forest-goers since ITNs are not suitable in the forest. It was also suggested to channel the right antimalarial drugs (according to guidelines) and encourage private drug sellers, including trained midwives, to provide clear advice to their potential customers.
- **Thailand and Lao People's Democratic Republic.** In December 2006, Dr Holly Williams and Dr Jane Bruce conducted supervision visits to assist with data analysis. It was found that the teams lacked skills for data management. Because the Thai team was overwhelmed with the data collected, the consultants selected a question and trained them on how to analyse it. For the Lao People's Democratic Republic, the consultant worked with secondary data that had already been summarized and pre-analysed by the health education unit without participation of the research team members. The results were opposite to the quantitative data, which demonstrated a lack of skills in performing qualitative surveys. It was therefore suggested to give close support to the country team in preparing, conducting, managing and analysing data for monitoring and evaluation. Another suggestion was to provide close assistance to the Lao team for project implementation.
- **Lao People's Democratic Republic.** In March 2007, Pricha Petlueng conducted a supervision visit to Attapeu. It was found that village volunteers were satisfied with the malaria training and have been providing comprehensive services including education and mobilization of communities since September 2006. They have noticed fewer malaria cases compared to a year ago. According to district health office records, random blood tests in the selected villages in November 2006 found less than 10% (three out of 36) were positive for malaria as compared to 27% (18 out of 66) in November 2005. Volunteers found that people come for malaria diagnosis because of the availability of RDTs and education sessions provided to communities. Volunteers found it difficult to gather people for malaria education sessions; it was easier to educate people while observing bednet usage in the evening.

Volunteers mentioned that there was a need for more bednets as many families have not enough nets to cover all family members and forest-goers. There was a plan for additional bednet distribution in April 2007. It was suggested that people who go into the forest should be encouraged to bring bednets with them because many malaria cases have occurred in this group of people. It was also suggested that district staff should continue regular supervision visits to village volunteers, use checklists and assess the revised role of the village volunteers and district health staff. The training on malaria control and the delivery of bednets, RDTs and ACTs should be conducted soon, before the rainy season.

- **Cambodia.** In March 2007, Pricha Petlueng visited targeted villages in Rattanakiri. It was found that VHVs and VMWs regularly attend monthly meetings. They report on the malaria situation and provide updates on the project implementation status. VMWs seem to be competent in providing malaria diagnosis by using RDTs and in prescribing ACTs according to guidelines. VHVs have some difficulty in motivating people to attend malaria education sessions, but they seem to conduct good one-to-one malaria education sessions while monitoring bednet usage. It was also found that VMWs need assistance to record and calculate malaria cases. There is a need to increase VHV capacity and skills in organizing and conducting health education sessions. The project coordinator revised the village volunteers' monitoring and supervision form which contains information on malaria cases, RDT and ACT usage, bednet usage for both forest-goers and household members, and health education sessions.

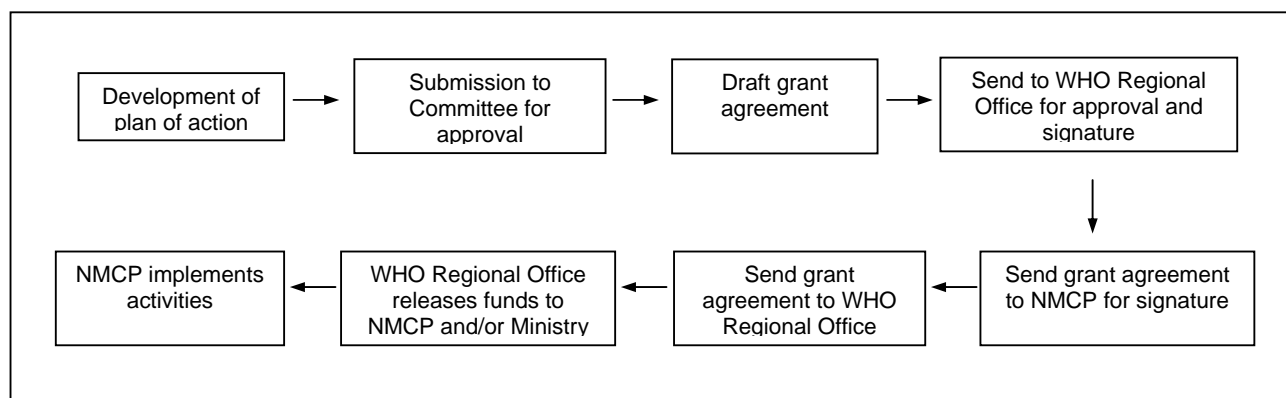
8. Project management constraints

Since June 2006, substantial progress has been made in all countries except Myanmar. However, the following project management constraints have considerably slowed down field activities.

8.1 Administrative and financial procedures

Before funds are released to the NMCPs (which are the contractual partners) all plans of action have to be reviewed and approved by the Advisory Committee members, followed by the many further steps described in Box 1, which consume a large amount of time and energy.

Box 1. Procedures of approval and release of funds to contractual partners



The project coordinator did his best to speed up the process by encouraging countries to polish their plans without delay in order to get approval by all Committee members (who sometimes did not provide quick feedback). It was suggested to send in parallel draft plans to the technical unit in the WHO Regional Office for the Western Pacific for comments and pre-approval. This would help countries to receive requested funds in 2007 with minimum delay. The WHO Regional Office releases funds in several instalments (normally three), which did not help to speed up availability of funds in the field.

A further constraint in some countries is linked to internal country managerial procedures to release funds to those implementing project activities. For example, in the Lao People's Democratic Republic, funds have to be channelled through the Ministry of Health. Quite some time is needed before funds reach the project focal person in charge of implementing the plan of action because the programme (CMPE) needs to submit to the Ministry of Health a detailed activity and budget planning prepared by field staff. The field planning in turn needs to be approved by the Ministry of Health. Funding will then be released from the Ministry of Health's bank account to CMPE's account. The project focal person then has to request CMPE to release the planned budget for field implementation.

This is general practice for all projects. To speed up procedures, the focal person needs to submit as many field implementation plans as possible for the Ministry of Health to release funding promptly.

8.2 Lack of human resources at central level and in the field

In addition to this project, the focal persons are responsible for managing and implementing activities supported by other partners such as GFATM, World Bank, JICA and also have to provide assistance to other programmes such as school health, dengue fever and intestinal parasitic diseases. At provincial and district levels, the limited number of skilled staff also faces similar situations in terms of dividing their time between different health programmes which all need support, follow up and reporting. The limited availability of field staff has contributed to delays in project implementation.

The Project has encouraged focal persons to delegate as much as they can in terms of technical follow-up, financial support and reporting to district and field staff. The integration of activities with other programmes operating in the same villages has been encouraged. However, the integration of rather vertical

programmes with other health programmes is still a challenge that deserves careful attention.

9. Technical challenges

To implement, sustain and monitor interventions expected to have an impact in ethnic minorities and hard-to-reach populations, the following challenges have to be considered.

9.1 General or enabling environment challenges

9.1.1 Logistical constraints

A serious constraint mentioned by local communities and by staff directly involved in providing health care deliverables in all countries is extremely bad road connectivity, especially during the rainy season. Several months per year villages are not accessible even by the most motivated health staff. In return, villagers cannot easily access community health staff, peripheral health posts or clinics and of course referral health care facilities where severe diseases can be better managed. This situation, which is a broader development challenge, far above the health sector, will take years to be addressed. From a health standpoint, the bad road conditions seriously affect regular procurement and delivery of commodities to remote villages (drugs, diagnostic tests, ITNs, etc.) as well as regular supervision and reporting. Practical innovative approaches are needed to overcome this difficulty, including (1) increasing collaboration with the private sector interested in doing business with that population, (2) using special vehicles (e.g. 4x4 wheel drives) with performing communication systems to ensure quick referrals, etc., and (3) stocking commodities at village level (including fridge on solar power) expected to cover the rainy season. Project teams have been encouraged to calculate and stock up ITNs, RDTs and ACTs at village level to last through the “non-access” months.

9.1.2 Lack of collaboration with other health programmes facing similar challenges

Many health programmes, such as the ones that address tuberculosis, HIV/AIDS, reproductive health and avian influenza, face the same challenges since they operate in a similar context. Common programmatic strategies could be explored to reach these vulnerable populations on a regular basis and for the at-risk population to have better access at all times to primary health care messages and deliverables.

This is a long-term objective that the Project would like to achieve. The Project will encourage NMCPs to increase their collaboration with other health programmes, perhaps starting with the shared delivery of commodities to targeted areas.

9.1.3 Absence of health system policy pertaining community health volunteers and workers

In remote areas, where the formal peripheral health system is absent, community health volunteers and/or workers (depending on the country) are seen as the “magic” and most peripheral instruments of the official health system to deliver commodities, IEC messages, etc. All countries have developed their own views, systems and experiences of VHWs as part of the primary health care system, pertaining their selection, training curriculum, terms of reference, functions, incentives or salaries, supervision, career development, and reporting. In addition, VHWs are poorly supported by peripheral health posts and clinic staff who are

supposed to play referral and supervision roles for them. Staff working in peripheral health posts or clinics are not always prepared to manage cases referred by volunteers, and the number of health posts is often insufficient (low coverage). The posts are still situated very far from villages, which makes referral very difficult.

The Project could document the roles, functions and performance of community volunteers in the six Mekong countries as the basis for developing and proposing to national authorities a Mekong Community Health Strategy, starting with malaria control and eventually expanding to a multi-diseases approach that is fully part of the national health policy.

9.1.4 Lack of collaboration with the private sector and NGOs

The private sector and NGOs are not sufficiently involved in the development of innovative strategies to reach remote populations. The private sector is already successfully operating in many complex situations, trying to bring essential (including health) commodities to those who need them (e.g. Coca Cola or beer companies). Increasing links between the health sector and selected private companies could help bring basic health commodities to remote populations.

9.1.5 Lack of policy consistency between countries especially pertaining to border health management

Only Cambodia, Lao People's Democratic Republic and Myanmar are following WHO guidelines on case management by using recommended three-day ACT regimens such as artesunate-mefloquine or Coartem®. Others are using either two-day ACT regimens (Thailand) or monotherapies (China and Viet Nam) for non-complicated malaria cases. Such discrepancies may reduce the efficacy of even the best designed IEC messages to villagers crossing borders as well as mobile populations.

9.2 Specific technical challenges

9.2.1 Health care coverage

Lack of coverage and inadequate performance of public peripheral and referral health care facilities are particularly problematic in remote locations. For example in Myanmar, there is on average one health centre per seven villages in remote areas versus one health centre per four villages in other environments. In the Lao People's Democratic Republic, one health centre covers 20 villages in remote areas compared to 10 villages in an "easy-to-reach" environment. Consequently, in remote locations, a large proportion of the population needs over an hour to access the nearest peripheral health post.

9.2.2 Free-of-charge strategy

Implementation of the free-of-charge strategy for essential commodities (including malaria drugs, impregnated bednets and LLINs) remains a health system challenge. In most countries, the health staff is not satisfied with current working and financial conditions. This contributes to poor public health system performance (e.g. most clinics and hospitals are empty in Myanmar) and an increased shift to unregulated private practices with antimalarials (sometimes counterfeit) and RDTs being sold rather than provided free of charge. This problem could be minimized by providing incentives to remote health staff and village health volunteers, closely supervising them and progressively including them in the primary health care system with a clear national policy and an enabling environment.

9.2.3 Low malaria endemicity

In most countries (except Cambodia according to results from Table 2), malaria endemicity has dropped dramatically, even in remote locations, so that less than 5% of people with fever are microscopically positive (*falciparum* or *vivax* malaria) or RDT positive (*falciparum* malaria). This means that the majority of fever cases are no longer due to malaria infections, which challenges instances where malaria health workers prescribe antimalarials (often these are the only medicines they have) following a negative RDT, and urges the development of simple multi-disease clinical algorithms and the systematic use of more expensive combined *P. falciparum/P. vivax* RDTs. The WHO Regional Office for the Western Pacific is conducting operational studies to explore clinical algorithms for the treatment of non-malarial fevers to be developed according to the epidemiological situation and capacity of VHWs.

9.2.4 Personal protection for those staying in forest environment

In villages, community health workers are aware that infected cases are mainly among those who have travelled to or have stayed in forest areas. However, there is no clear strategy to protect this at-risk population, given that ITNs or LLINs do not seem to be the best tools in such particular circumstances, especially when shelters or huts are not available. LLINs or ITNs, however, can work for whole families that move for some months to specific forest fringes or forest locations. For these families, in addition to nets used in villages, extra nets (to be costed) could be provided to cover such transitional periods. Additional research is needed to find alternative personal protection measures for temporary workers in forests, such as impregnated blankets, clothes or hammocks and hammock nets.

9.2.5 Supervision of and reporting by VHWs

Practical mechanisms need to be set up to supervise village workers, e.g. by staff at the closest health care posts and by district staff, especially during the rainy seasons. One interim solution is to determine geographical locations that are reachable both by volunteers and health staff in such a way that commodities could be brought there, refresher training sessions organized and reporting on activities done.

9.2.6 Monitoring and evaluation

The Project has clearly demonstrated that the capacity of provincial and district staff is still limited to conduct more sophisticated community surveys (household surveys and focus group discussions) as well as to analyse and report on data generated by these surveys. Intensive training courses in epidemiology and operational research methodologies would be needed, backed up by national staff and international experts.

10. Conclusions

Due to the delayed start of the project, the WHO Regional Office for the Western Pacific has requested a no-cost extension from October to December 2007, which ADB has granted. All teams have adjusted their activities to suit the malaria season and the new proposed time frame. Malaria situations have been reviewed by country teams and baseline data surveys were conducted for almost all countries between June and September 2006. The final evaluation will be conducted during the same months in 2007. The final evaluation for Myanmar, which conducted its baseline survey in March 2007, is expected in November 2007.

The GMS countries have adopted community-based approaches for malaria prevention and control in ethnic minority groups, e.g. promoting the use of ITNs, encouraging sick people to seek early diagnosis and effective treatment. The capacity of provincial, district and local health staff to provide and monitor malaria control services effectively has been strengthened through regional and local training workshops as well as field monitoring and supervision visits. Technical inputs have been given to focal points and field officers in charge.

Data from baseline surveys showed that the majority of targeted villages had low bednet coverage, ranging from 6.8 persons per net in China to 1.9 persons in the Lao People's Democratic Republic (the expected ideal average being 2.4 persons per net), and low bednet usage, ranging from 24% in Cambodia to 79% in Viet Nam. Therefore, the project's contribution towards increasing bednet coverage and usage has been essential. Of concern also was the low percentage of people seeking malaria diagnosis and treatment within 48 hours (19% in Viet Nam, 26% in the Lao People's Democratic Republic and 31% in Cambodia). The Project has helped to train and equip village volunteers to provide quality services and to mobilize communities for early detection of malaria infection. The findings from the surveys showed a high percentage of people with knowledge of malaria transmission, symptoms and prevention (ranging from 80% in Cambodia to more than 95% in Viet Nam and Thailand). However, country teams still need to focus on specific vulnerable groups, for example, by educating them on prevention and control of malaria and also by developing innovative tools for forest-goers.

Country teams have made good progress. China has established VMCVs, Thailand has re-established CoMCs to provide malaria control services, while Cambodia, the Lao People's Democratic Republic, Myanmar and Viet Nam have continued with existing village volunteers. Training and re-training on malaria control and prevention services – including bednet impregnation, use of RDTs and ACTs and communication and/or social mobilization sessions – have been conducted for village volunteers and local health staff. Increasing bednet distribution will allow to reach 100% coverage of all family members in all six countries. Extra nets (if relevant) targeting forest-goers will be also useful and need to be costed. RDTs (ideally combined for *P. falciparum* and *P. vivax*) and ACTs should continue to be distributed to volunteers and monitored by health staff in targeted villages. Village monitoring and supervision forms have been developed and adapted to monitor the progress and strengthen malaria control activities and situations at village level. Regular village monitoring visits and meetings have been conducted. Various malaria educational materials have been updated and reproduced from the previous IEC project, e.g. flipcharts, posters, booklets, audio and video materials.

The Project has faced administrative and technical challenges. The project focal persons need to address delays in the release of funding by proposing different activity plans and submitting them to the Ministry of Health for approval with the aim of eventually releasing funds in one go. The project focal persons also need to plan and delegate activities to provincial and district staff while ensuring proper reporting mechanisms. Ensuring the regular availability of malaria control commodities in targeted areas is a serious logistic challenge during the rainy season. This issue needs to be responded to with innovative approaches, e.g. arranging enough commodities to cover the whole transmission season and delivering them to hard-to-reach areas on a timely basis. The project team may consider strengthening integration with other disease control programmes, e.g. immunization campaigns, diarrhoea disease control, and collaborating with private entities.

There are some general challenges for malaria control programmes to consider, for example insufficient health care coverage and lack of referral health care facilities in remote areas where malaria is still a disease of major importance as compared to urban settings. The free-of-charge strategy is not well implemented or lacks consistency within health systems. In principle, ITNs and antimalarial drugs have to be provided free of charge, at least to the poorest families, yet no clear policies are in place for these people. Also, there are no appropriate personal protection options for forest-goers and migrant workers who temporarily work in forests.

The prevalence of malaria is progressively declining in most Mekong countries. In selected villages, fewer than 5% of people with fever tested positive for falciparum malaria.

Practical mechanisms need to be set up for the supervision of and reporting by village volunteers, especially during the rainy season when access to villages is very difficult if not impossible. A possible interim solution may be to determine agreed-upon (between volunteers and health staff) geographical locations that are reachable by volunteers and health staff in such a way that commodities could be brought there, refresher training sessions organized and reporting on activities done.

The following general issues should be considered by programme managers and ministries of health:

- (1) **Lack of national and local commitment for scaling up specific approaches for ethnic minorities.** Although NMCPs have been contributing bednets, RDTs and ACTs to the targeted villages and will expand interventions to a few villages according to their country plans, they have not yet clearly defined how to scale up interventions of relevance to other ethnic minority groups in other geographical areas. To be able to reach these population groups, NMCPs need to plan and use funding from various malaria control projects and sources (such as GFATM).
- (2) **Malaria control strategy for ethnic minorities.** Although countries have made substantial progress to understand and reach these particular groups, there is not yet a clear, finalized malaria control strategy for ethnic minority groups. From project experiences so far, the budget needed to address the many challenges in reaching ethnic minorities is above routine “normal” malaria control services. This extra costing for strategic activities in such settings needs to be carefully assessed in order to provide direction for decision-makers at national and local levels.
- (3) **Volunteer-based system.** The Project is relying on village volunteers to deliver malaria control services. All countries have established either incentives or salaries to support volunteers as part of the health system. Besides Thailand and Viet Nam, where monthly allowance incentives are being paid by the local administrative office, no clear policy is in place to sustain this approach. In Cambodia, China, the Lao People’s Democratic Republic, Myanmar and Viet Nam, the project teams have monthly allowances, travelling costs and additional tools and equipment available to run the project. NMCPs need to recognize the role and functions of village volunteers, strengthen their capacity and find sustainable solutions to encourage and maintain their commitment, career prospects and delivery of quality services.

11. Recommendations for the 2007 project implementation and beyond

During the programme review meeting in December 2006, and monitoring visits throughout the year, the project experts and country participants suggested several ways to improve project implementation and control interventions. These suggestions are summarized below (see Annex 4 for specific recommendations made by each country team).

- 1) The village volunteer support system has been an integral part of the national health system, targeting ethnic minorities and hard-to-reach-populations. Project teams, with WHO assistance, should better document their roles, functions and performances as the basis for developing and proposing a national policy pertaining the use of volunteers.
- 2) An assessment of the additional cost of interventions to control malaria among ethnic minorities should be undertaken and is planned for mid-2007.
- 3) Forest-goers are the most vulnerable to malaria infections. According to accounts from Cambodia, the Lao People's Democratic Republic and Viet Nam, many of them do not take bednets into the forest for various reasons. Suitable effective solutions should be explored by NMCPs and researchers, taking into account what forest-goers typically bring with them when going to the forest (e.g. blankets) and other options such as repellents.
- 4) To increase ITN coverage, project teams should set up appropriate systems to ensure that insecticide and equipment for bednet impregnation are available to village volunteers throughout the year. This recommendation also applies for RDTs and ACTs.
- 5) The capacity of village volunteers and local health staff should be strengthened to ensure effective malaria control at the peripheral level. Volunteers and local health staff have been trained on malaria control, including communication skills. Their knowledge and skills should be further strengthened through refresher training workshops, regular monitoring and supervision visits.
- 6) Monitoring and supervision activities should be strengthened to increase the effectiveness of malaria control, in particular for ethnic minority groups. Monitoring checklists developed by Cambodia, China and Viet Nam should be revised to make them easier to use. Team members should also revise the type of data that village volunteers collect regularly for their own benefit and for the benefit of the programme in terms of M&E.
- 7) All countries should strengthen the skills of village volunteers to increase and maintain community education and mobilization. Messages could be further developed to target other community health concerns, based on the malaria programme experiences.
- 8) Household visits are opportunities for village volunteers not only to monitor bednet use, but also to educate and encourage household members in malaria control. Cambodia, China, the Lao People's Democratic Republic and Viet Nam successfully developed monitoring forms for village volunteers to

increase bednet usage for people staying in villages and people going to the forest.

- 9) Strengthening capacity of project members in monitoring and evaluation is an area of great importance. All countries lack appropriate skills in conducting operational research, especially qualitative surveys. Team members need substantial assistance to prepare data collection, computerize and clean data, analyse the data, and summarize main findings for writing reports in English. Beside ongoing support from project experts, the project is contracting a research specialist within the region to provide closer assistance to country teams. However, a medium-term strategy is needed for capacity-building in this area as increased funding sources are increasing demands on M&E.

Annex 3: Details of the pilot project implementation areas

	Cambodia	China-Yunnan	Lao PDR	Myanmar	Thailand	Vietnam
Name of province	Rattanakiri	Yunnan	Attapheu	Eastern Shan State	Mea Hong Son	Khanh Hoa
Target ethnic groups in the target areas (how many ethnic groups, what are they?)	1: Kreung	2: Wa, Lahu	2: Brau-Lave (70%), Taliang (30%)	8: Akha, Shan, Lahu , Pa Laung, Wa, Kokant, Li Shaw, Chinese	1: Karen	1: Raglai
Number of districts	1 district: Ochum, 3 communes	1 district: Yuesong township of Ximeng county	2 districts: Phouvong, Shanxay	1 district (Tachilieik): consists of 3 townships (Tachlieik, MonHsat, Mong Tong)	2 districts: Maung, Sopmoei	2 communes: Khanh Nam, Khanh Trung
Number and name of villages	10 villages: 1. Laak village 2. Raya, 3. Tangpleng 4. Tharang Svay, 5. Pie 6. Kaim 7. Krola 8. Krolong 9. Kok Poy 10. Kok Ampil	3 villages: 1. Yuesong 2. Banshuai 3. Mangxing	Shanxya district: 4 villages: 1. Tadseng 2. Hindum 3. Darkchang 4. Darkdoun Phouvong district: 4 villages: 1. Namchoan 2. Houykeo 3. Etoum 4. Ka Oun	Mong Hsat (Melpan, Pan Paun,, Mel Swan. Phar Pe, 10-miles, Eu Phu, Pan Nar, Ho Me, Pan Nar, Kya Te, Nar Le) Mong Tong (Nar Par Kaw, Haun Ye, Mine Kan New, Hwe Haw, Hwe Par Satt, Nar Kaun Mu, Lwe Kan Lon, Naun Yar Eine, Aung Chan Tha, Mine Khan) Tachileik (to be provided)	Maung District: 2 villages: 1. Hoipong 2. Hoichangtai Sopmoei District: 3 villages: 1. Sivader 2. Kormooder 3. Sopmoei	Khanh Nam commune: 4 villages: 1. Hon Du I 2. Hon Du II 3. Axay 4. Village 6 Khanh Trung commune 3 villages: 1. Suoi Lach 2. Suoi Ca 3. Song Giang
	Cambodia	China-Yunnan	Lao PDR	Myanmar	Thailand	Vietnam
Pilot areas	10 villages, Ochum district, Rattanakiri province	3 administrative villages (32 natural villages),	8 villages, Phouvong and Sanxay districts,	50 villages (30 villages in Tachileik, 10 villages in Mong Tone, 10 villages in	5 villages (3 villages in Sopmoei, 2 villages in Muang district), Mae	7 hamlets in Khanh Nam and Khanh Trung communes,

		Yuesong township, Ximeng county, Yunnan province	Attapeu province	Mong Hsat), Tarchileik District, Eastern Shan State	Hong Son Province	Khanh Vinh district, Khanh Hoa province
Number of ethnic populations	1: Kreoung	2: Wa, Lahu	2: Brau-Lave, Taliang	8: Shan, Akhar, Lahu, Pa Laung, Wa, Kokant, Li Shaw, Chinese	1: Karen	1: Raglai
Target population	3,725	4,467	2,436	18,336 (2796 in Mong Hsat, 5867 in Mong Tong, 9673 in Tachileik)	2,447	4,192
Number and sex of village volunteers	20 village health workers (4 women, 16 men)	18 volunteers (9 male, 9 female)	16 volunteers (13 male, 3 female)	10 in Mong Hsat (6 male, 4 female) 10 in Mong Tong (7 male, 3 female) Tachileik (to be provided by the end of the June 2007 as selection by the community members is on going)	7 volunteers who work at Co-MC (5 male, 3 female)	13 volunteers (including VHWs) (3 male, 10 females)
Number of commune health centre(s)	1 health centre	1 health centre: Yuesong Township Hospital	1 (only Phouvong district has a health centre)	Total= 59 (4 station hospitals, 11 rural health centres, 44 sub-rural centres)	4 health centres in 5 villages (2 health centres in Maung district, 2 health centres in Siopmoei district)	2 CHCs
	Cambodia	China-Yunnan	Lao PDR	Myanmar	Thailand	Vietnam
Number of staff in health	2 nurses	8 staff: 2 clinical physician, 3 anti-epidemic staff,	1 midwife	21 midwives are supposed to serve the 50 target villages (but the	14 health staff in 4 health centres (8 health staff in Maung	7 staff: 1 doctor, 3 assistant doctors, 2 nurses, 1

centre and type of staff		1 maternal and child care staff, 2 nurses		villages are very hard to reach so access to services is very difficult)	district, 6 health staff in Sopmoie district)	technician
Distance of commune health centres	1-2 hour walk from health centre to village	In the located at Yuesong Township Government. It is a 4 hour walk from the farthest village to the health centre.	Health center is in Etoum village. If other villagers want to come they need to walk 1 or 2 hours (for four villages at Phouvong district)	The 50 target villages vary in distance to the health centre. On average 5-10 miles, but physical access is very difficult.	In Maung District, Hoipong to health centre 20 km, Hoichang to health centre 25 km In Sopmoei district, Sivader to health centre 30 km, Kormooder to health centre 23 km, Sopmoei to health centre 5 km. Villagers access by boat and on foot.	Some parts of Village 6 and Suoi Lach Village (It takes a half or 1 hours for villagers to com CHC on foot)
Nearest referral hospital	1-1.5 hour walk	Mengka Town Hospital (20 km: 30 minutes by car and travel cost \$2 US)	Shanxay hospital (16 km: 2 hours by bus and travel cost \$3 US)	In Mong Hsat and Mong Tong 1 station hospital in each township for referral, In Tachilieik, there are 3 station hospitals for referral, but distance and accessibility are in general very difficult.	In Maung district, only 1 provincial hospital far from village (around 50-70 km) In Sopmoei district, 2 district hospitals (Maesareang Hospital and Sopmoei Hospital). They are far from 3 villages around 48-50 km.	Khanh Vinh hospital (5 –7 Km) one hour away on foot.

Annex 4: Recommendations made by countries for 2007 implementation

	Intervention	IEC and training	M&E
Cambodia	<ul style="list-style-type: none"> • Increase bednet coverage (free to poor families) try to cover 100% of the population • Provide bednets for forest-goers • Mobilize for bednets impregnation • Health staff needs to show respect to communities • Prevention focus on young children 	<ul style="list-style-type: none"> • Focus on seeking EDAT within 24 hours with onset of fever • Focus on seeking EDAT from village volunteers or trained personnel • Refresh training for village volunteers on bednet dipping and IEC 	<ul style="list-style-type: none"> • Need assistance on qualitative research • Revise VHV/VMW monitoring and supervision checklist • Conduct regular field supervision visits
China-Yunnan	<ul style="list-style-type: none"> • Increase bednet and ITN coverage • Encourage people to seek EDAT from trained personnel • Encourage people to complete anti-malaria drugs • Village volunteers need to send blood smears to hospital for diagnosis within 3 days 	<ul style="list-style-type: none"> • Focus on seeking EDAT from village volunteers or trained personnel • Seeing village volunteers when having fever • Complete anti-malaria drugs • Train village volunteers to provide anti-malaria drugs correctly 	<ul style="list-style-type: none"> • Use standardized household questionnaire for mid-term and final survey • Conduct regular field supervision visits by township and county health personnel •
Lao PDR	<ul style="list-style-type: none"> • Need regularly supervision visit at village level • Increase bednet coverage based on the real need of the community • Need to conduct health education sessions regularly • Mobilize for bednet impregnation • Need to collect monthly reports from village volunteers and use them to analyse the situation • Conduct quarterly blood smears • Improve logistics for ITN, RDT and ACT • Participatory planning with village volunteers for prevention campaign 	<ul style="list-style-type: none"> • Focus on forest-goers to bring bednets to the forest • Seeking EDAT from village volunteers or trained personnel • Seeking diagnosis from village volunteers • Train local health personnel on behaviour change approach 	<ul style="list-style-type: none"> • Need assistance for qualitative and quantitative data management and analysis • Plan for regular supervision visit, especially in the wet season • Well prepared for project evaluation
Myanmar	<ul style="list-style-type: none"> • Finalize the manual and train basic health staff using the manual "empowerment community for malaria control programme" • Encourage people to utilize public services • Increase bednet coverage among remote populations • Use anti-malaria drugs correctly 	<ul style="list-style-type: none"> • Focus on malaria prevention and EDAT • Training on community based control approach 	<ul style="list-style-type: none"> • Need to adapt standardized household questionnaire for baseline data • Plan for regular monitoring and supervision visit
Thailand	<ul style="list-style-type: none"> • Increase bednet coverage • Improve prevention measures before going to bed • Encourage people to bring bednets when staying overnight in the field • Strengthen CoMC to provide malaria control services 	<ul style="list-style-type: none"> • Focus on seeking EDAT from village volunteers or trained personnel when having fever • Behaviour change training for village volunteers 	<ul style="list-style-type: none"> • Need assistance on qualitative research
Viet Nam	<ul style="list-style-type: none"> • Increase bednet/hammock net coverage among forest-goers • Encourage people to seek EDAT and 	<ul style="list-style-type: none"> • Focus on forest-goers seeking early treatment • Bring bednets for 	<ul style="list-style-type: none"> • Need assistance on qualitative and quantitative research

	<p>treatment from trained personnel</p> <ul style="list-style-type: none">• Encourage to use bednet/hammock nets in the forest• Wash bednets appropriately	<p>prevention of malaria</p> <ul style="list-style-type: none">• Wash bednets appropriately	<ul style="list-style-type: none">• Use data for planning intervention• Conduct regular supervision visit
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