MALARIA SITUATION & DRUG RESISTANCE MANAGEMENT IN CAMBODIA

AND

CONTAINMENT RESPONSE ALONG THAI-CAMBODIA BORDER AND BEYOND

ACTMalaria EB AND PARTNER MEETING
IN LAO PDR
17-18 March 2009

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Overview of the Presentation

- Malaria disease burden in Cambodia
- Key concerns related to the disease burden
- Obstacles/challenges faced
- Strategic Directions for the period 2006-10
- Malaria Situation from 1997-2008
- Monitoring Drug Resistance- sentinel sites
- ACT treatment failure in Cambodia
- Pailin study findings
- Three phases of the response
- Containment project and Proposal Round 9
- Activities after the trainining/workshop

Malaria Disease Burden in Cambodia

Population	Estimated Number	Year of Estimate
Total Population of Cambodia	14,363,519	2007
Population at risk (<2km from the forest)	2, 129, 396	2007
Estimated malaria episodes per year	601,583 (Based on % going to private sector)	2006
Reported malaria episodes per year (Public Health Facilities)	58,887 (Confirmed and unconfirmed)	2008
Reported malaria episodes per year (Village Malaria Worker Project)	24,439	2008
Malaria deaths per year (Reported in public sector)	209	2008

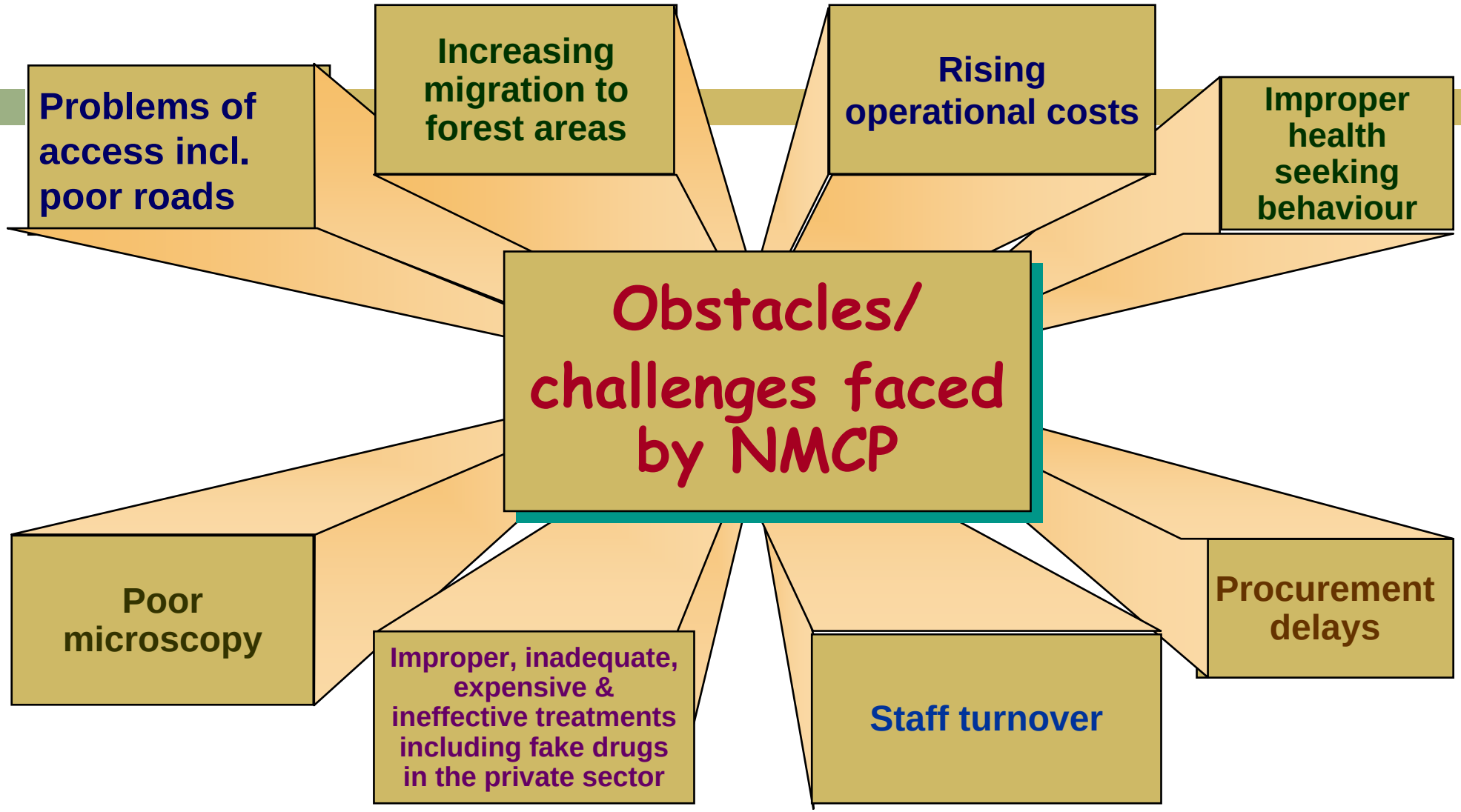
Key concerns related to Cambodia's Malaria Burden

High incidence among non-immune migrants, forest workers

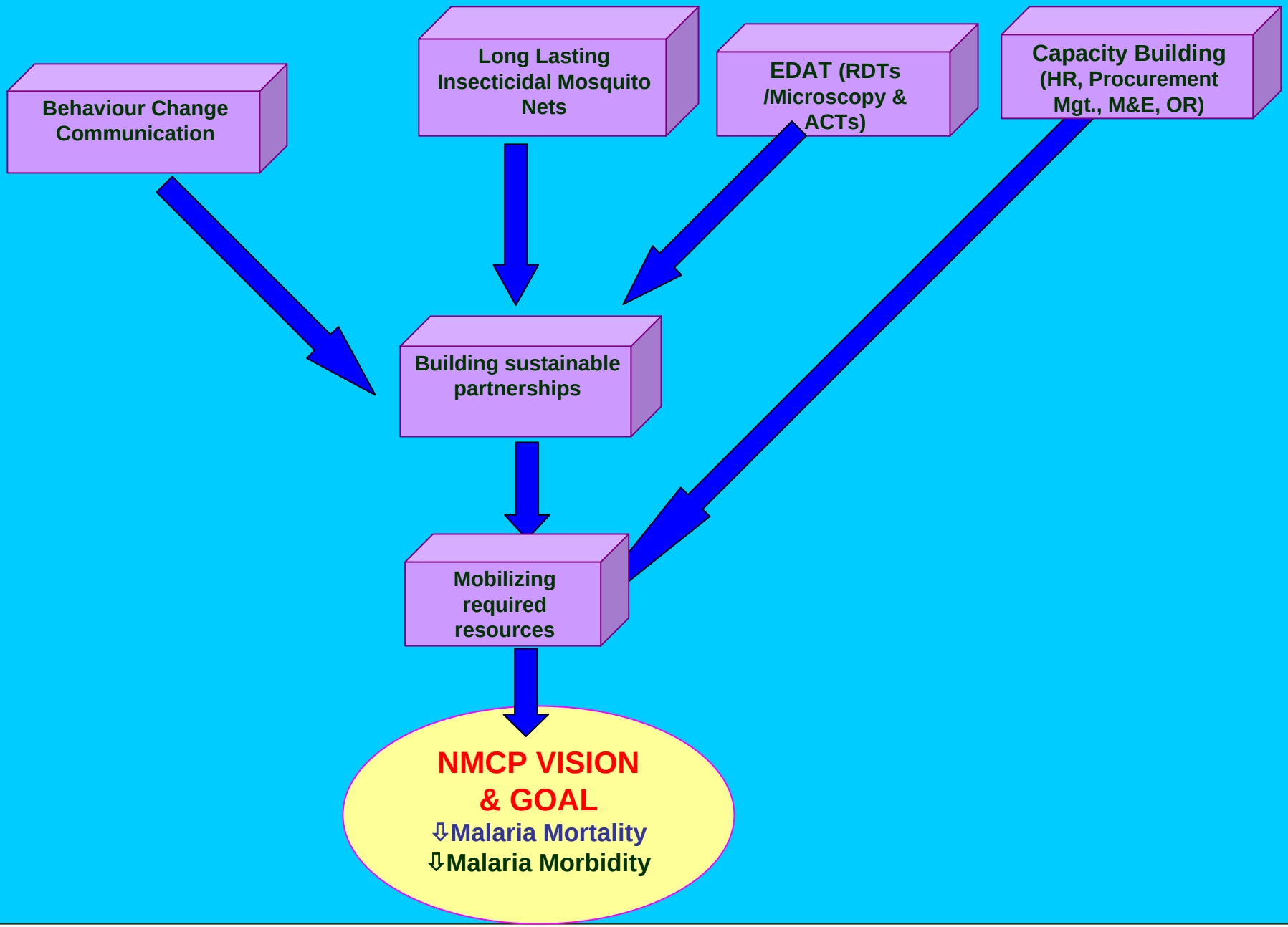
Imprecise diagnosis as poor quality microscopy persists in remote areas

Higher case fatality rate when compared to neighbouring countries

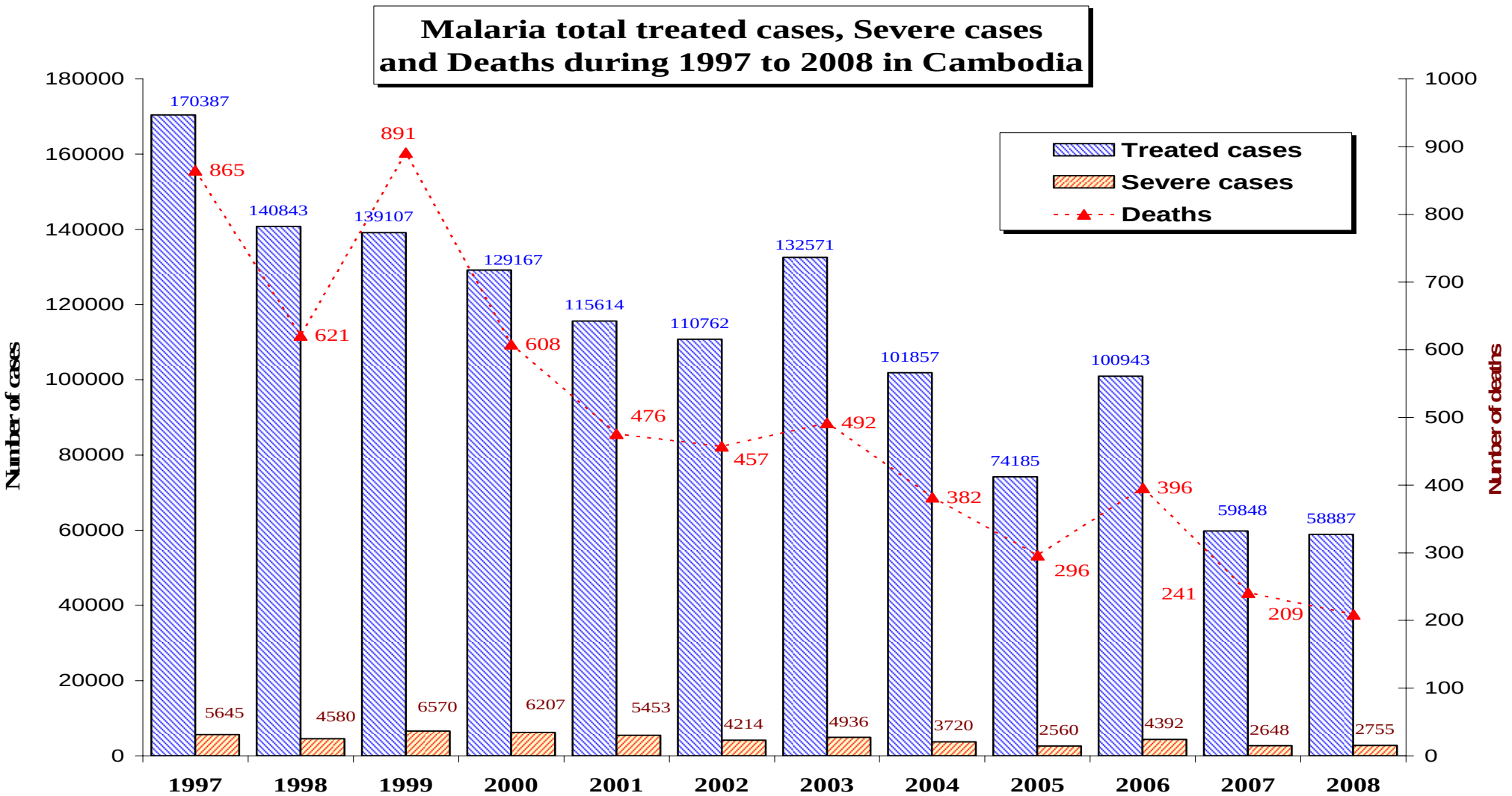
Abundance of improper, inadequate, expensive and ineffective treatment regimens incl. fake drugs in private sector


Problems of access incl. poor roads
Increasing migration to forest areas
Rising operational costs
Improper health seeking behaviour
Obstacles/ challenges faced by NMCP
Poor microscopy
Improper, inadequate, expensive & ineffective treatments including fake drugs in the private sector
Staff turnover
Procurement delays

Strategic Directions for NMCP from 2006-2010

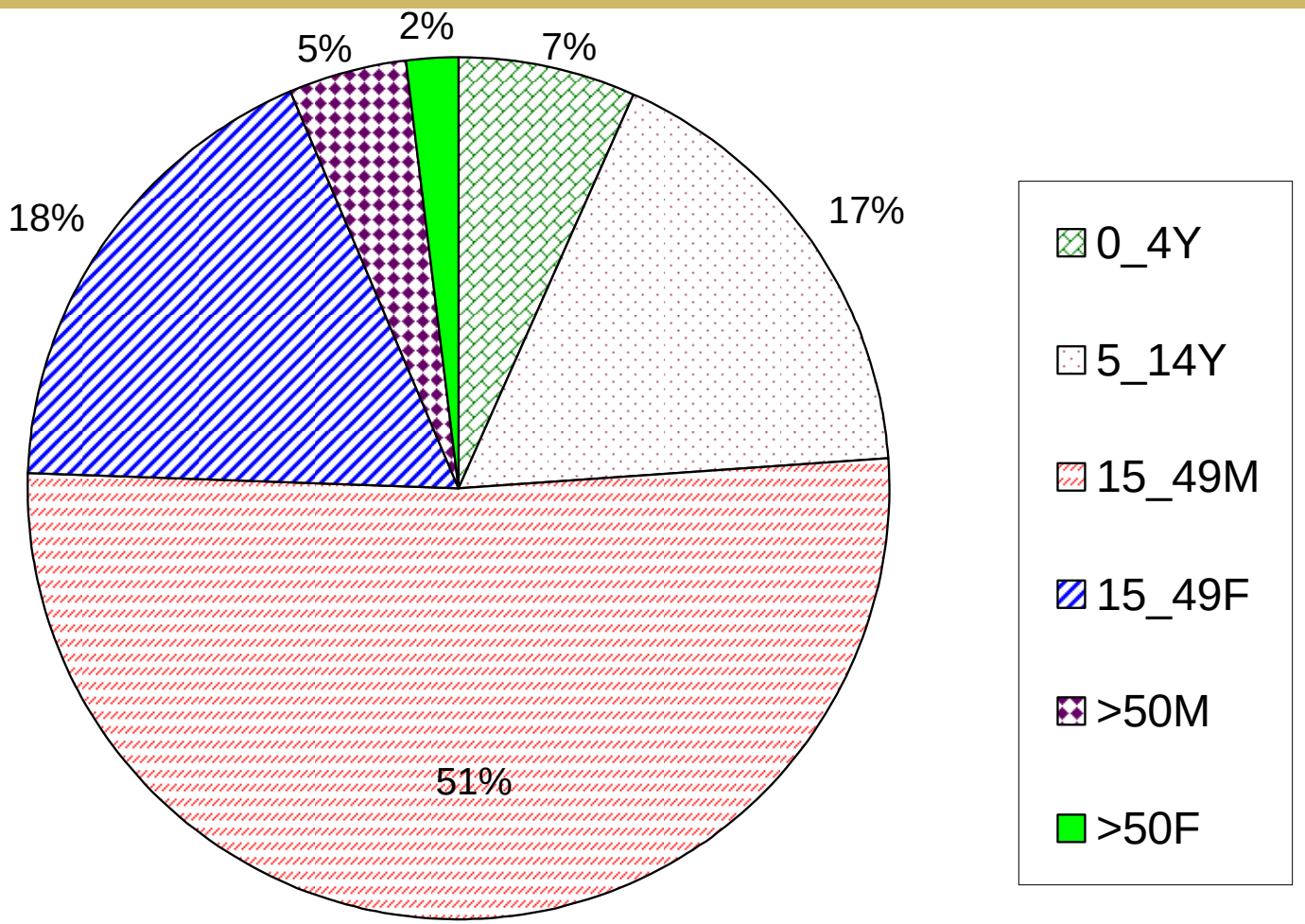


Malaria Disease Burden in Cambodia

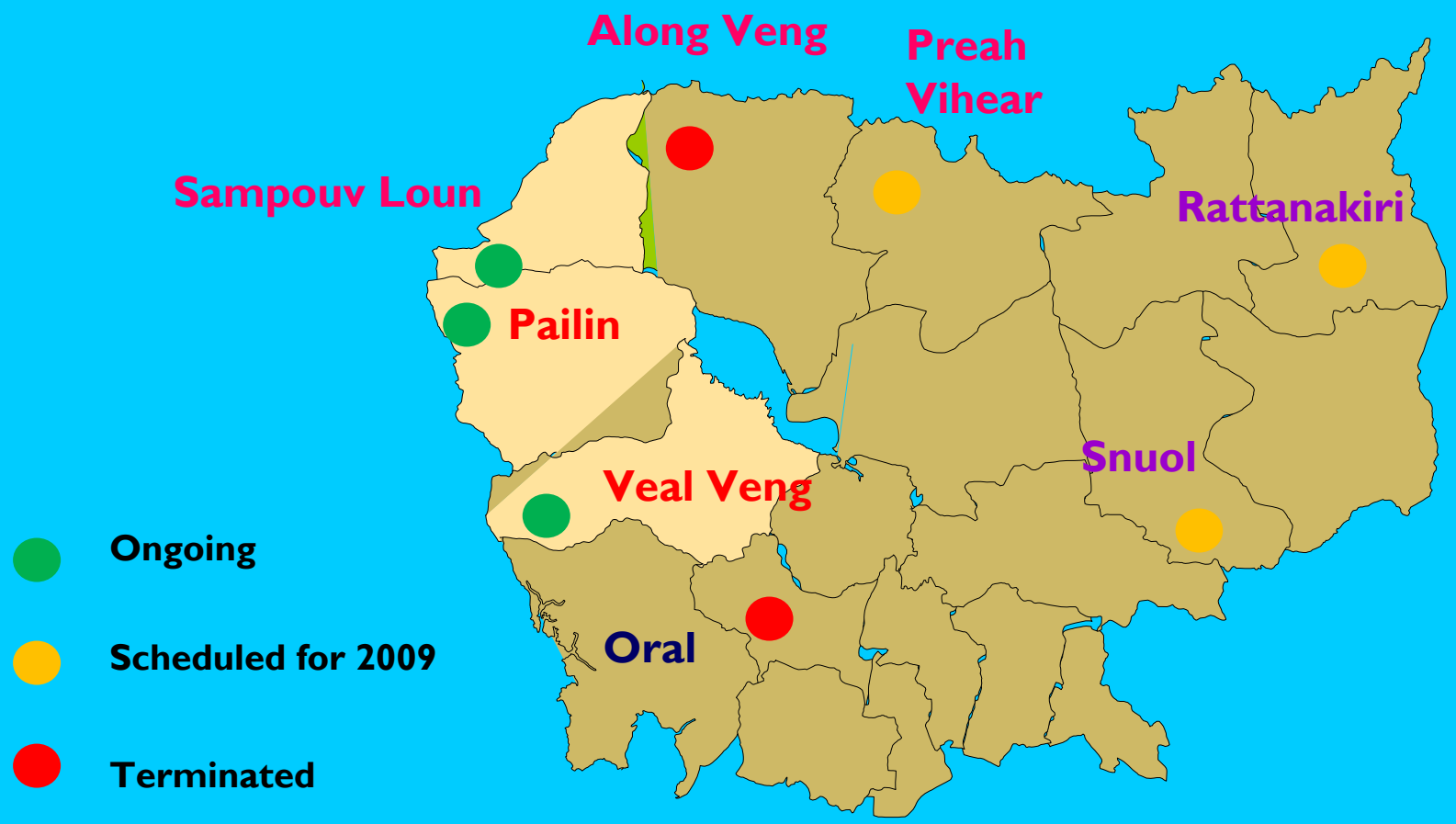


Average **9.7%** annual reduction of (reported) malaria cases since 2004.

Malaria confirmed cases by age groups, 2008
Cambodia (42,124 confirmed by microscope and RDT)

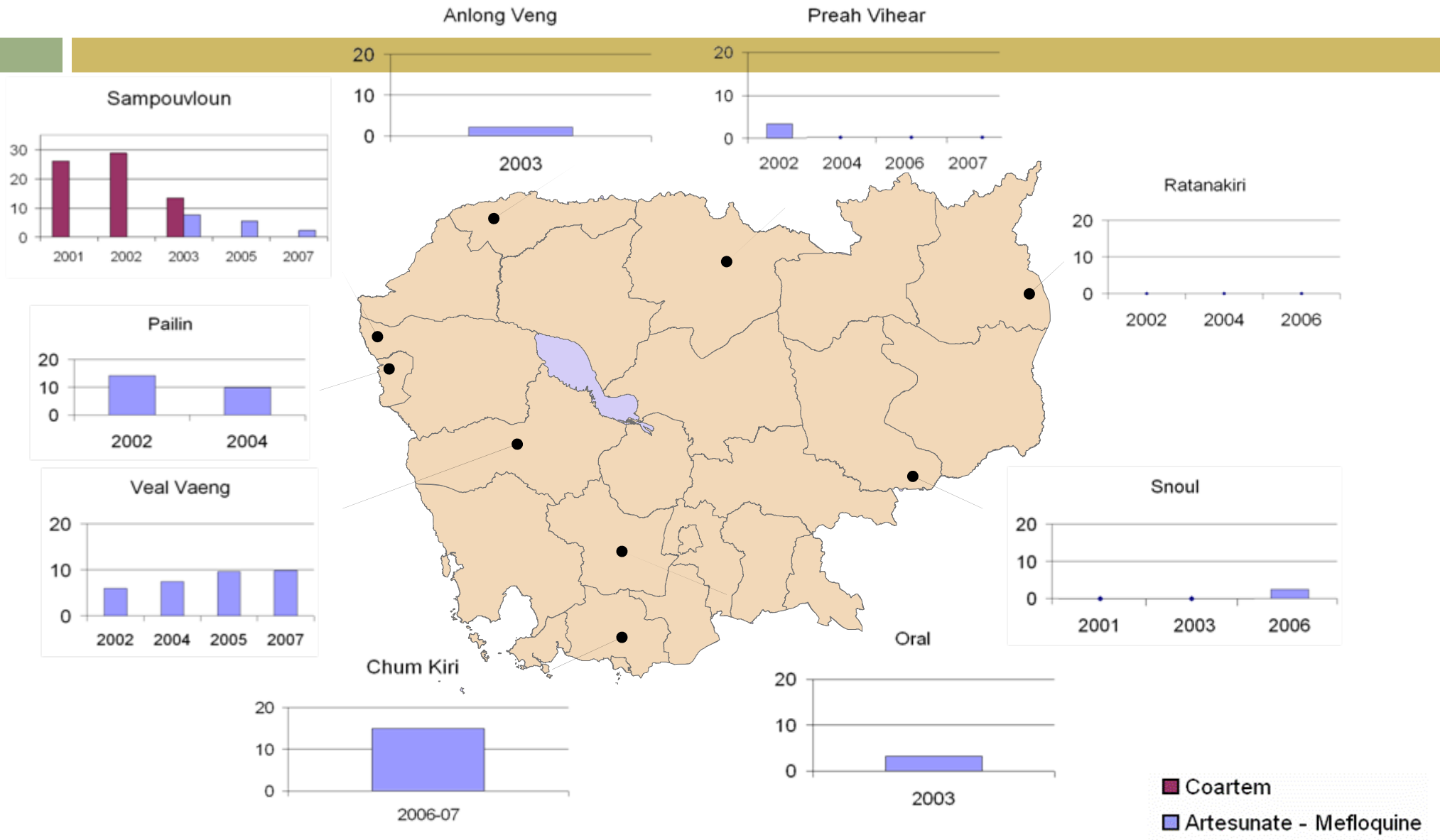


Monitoring Drug Resistance: Sentinel Sites



Proportion with ACT treatment failure in Cambodia

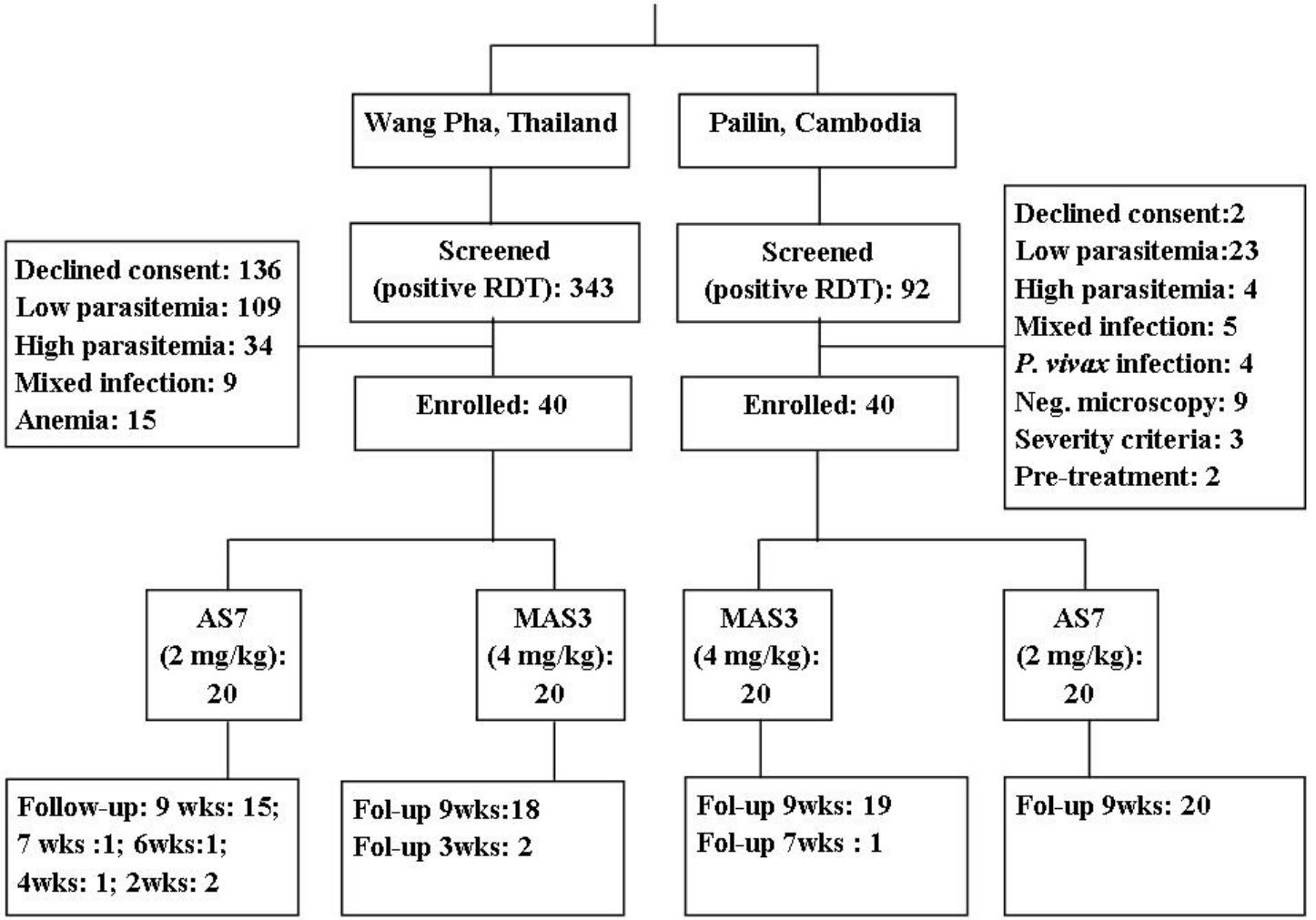
(2001-2007)



Implications from Pailin study findings

- While Artesunate + Mefloquine combination therapy (ACT) efficacy remains high in most studies, prolonged parasite clearance times following treatment with some ACTs & artemisinin monotherapy have been observed along the Thai/Cambodian border.
- This clinical & parasitological observation might reflect the emergence of *P. falciparum* tolerance to artemisinins, but other factors have not been ruled out.
- The sensitivity of ACTs needs to be closely monitored
- Anti malarial drug treatment policy should be reviewed every two years. The next review should be done early 2009.

Trial Profile



Parasite & Fever Clearance,ETF,Gametocytemia

	Wang Pha		Pailin		*p-value*
	AS7	**MAS3**	**AS7**	**MAS3**	Wang Pha v Pailin
Time to clearance (IQR), hrs	**54** (42, 72)	**48** (30, 54)	**83** (54, 96)	**72** (60, 96)	*<0.001*
No. early treatment failure, (%)	**0** (0)	**0** (0)	**7** (35)	**4** (20)	*<0.001*
Gametocyte duration, days	**19** (7, 19)	**13** (1, 19)	**10** (7, 19)	**18** (6, 23)	*0.41*
Gametocytemia,* person weeks	**0.058** (0.047, 0.070)		**0.070** (0.059, 0.082)		*0.13*
FCT-A (IQR), days	**1** (1, 2)	**1** (1, 2)	**1** (1, 2)	**1** (1, 2)	*0.72*

Values are median (range), except * is geometric mean (95% CI)

Three Phases of the Response

Phase 1:
January to December 2008

Phase 2:
January 2009 to December 2010

Phase 3:
January 2011 to December 2015

Response to Artemisinin Tolerance

- **January 2007, Phnom Penh:** WHO Informal Consultation on Containment of Malaria Multi-Drug Resistance on the Cambodia-Thailand Border
- **19 January 2008, Geneva:** WHO Meeting on Containment of Artemisinin Tolerance
- **9-10 February 2008, Bangkok:** ARC3 Clinical Trials Meeting
- **13-14 February 2008, Bangkok:** WHO MMP Informal consultation to define a strategy to contain/eliminate Plasmodium falciparum parasites with altered response to artemisinins
- **25 Feb.-1 March 2008, Phnom Penh:** National Stakeholder Planning Workshop to contain/eliminate *Plasmodium falciparum* parasites with altered response to artemisinins on the Cambodia-Thailand border
- **17-28 June 2008, Phnom Penh:** Informal Consultation on Resource Mobilization for the Containment/Elimination of Drug Resistant Parasites on the Cambodia-Thailand border.
- **August 2008:** Submitted 2-year, multi-country proposal to the Bill and Melinda Gates' Foundation.
- **September 2008:** Clarification of BMGF comments including the adjustment of budget and resubmitted on 16th September

Preparatory work

(October-December 2008)

- Held stakeholders' meetings to discuss medium term containment strategy as well as national private sector strategy for malaria control in October 2008
- Preparatory work for conducting feasibility study of MSAT in containment zone 1.
- Start preparation for implementation of Phase 2 (write SOPs, recruit new staff, meet with partners) which is expected to commence in January 2009.
- Mobilize other potential donors to address the financial gap for 2009 and 2010.
- Prepare medium to long term plan to submit through GFATM Round 9.

Containment/Elimination Project

Project Goal: *To prevent the spread of artemisinin-tolerant Plasmodium falciparum parasites by removing selection pressure and ultimately eliminating falciparum malaria.*

- **Strategic approach**
  - Ensure early and effective cure of all symptomatic infections by passive and active case detection, including eliminating infective stages of the parasite
  - Detection and complete treatment of asymptomatic parasite/gametocyte carriers by mass screening and DOTs.
  - *Focussing on P. falciparum but taking P. vivax into account.*

Containment/Elimination Project

Objective 1: To eliminate tolerant/resistant parasites by detecting the majority of malaria cases in target areas and ensuring effective treatment and gametocyte clearance.

Objective 2: To prevent use of artemisinin-based monotherapy (AMT), fake drugs and inappropriate treatment in the private sector

Objective 3: To prevent transmission of tolerant/resistant parasites by mosquito control and personal protection.

Objective 4: To limit the spread of tolerant/resistant parasites by mobile populations

Objective 5: To support containment of tolerant/resistant parasites through comprehensive BCC, community mobilization, advocacy.

Objective 6: To undertake implementation and operational research to ensure stratgies applies are evidence-based

Objective 7: To apply an effective management and information system to enable rapid and high quality implementation of the strategy

Example: Establish comprehensive malaria surveillance information and management system.

Containment Zones

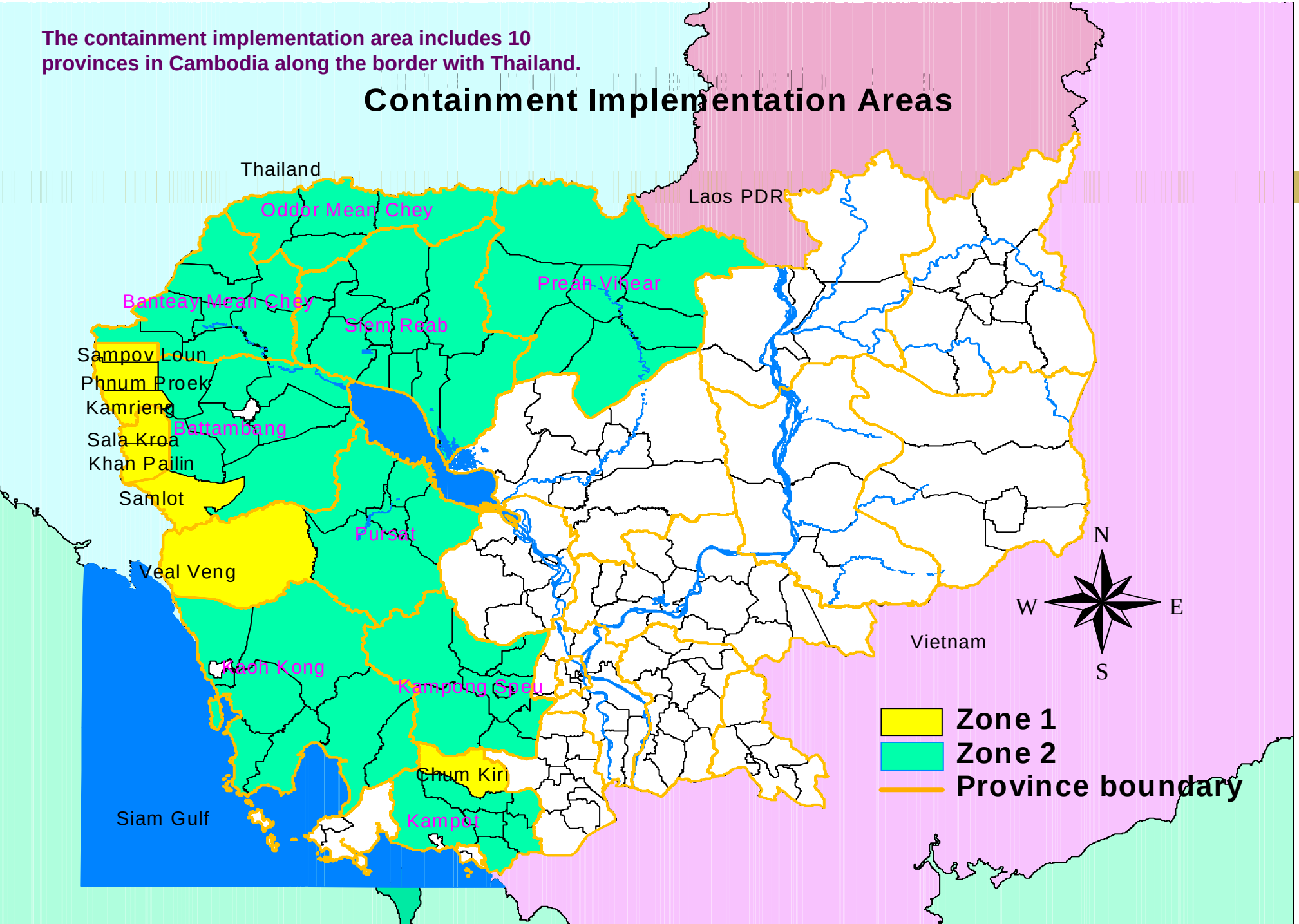
Cambodia-
Thai border

Zone 1 (Pink)= Evidence of tolerant parasites

Zone 2 (Green) = Buffer zone

The containment implementation area includes 10 provinces in Cambodia along the border with Thailand.

Containment Implementation Areas



Zone1- Target area and population

Provinces	ODs	ADs	HC/HP	Villages	Population
Battambang	Sampov Loun	Sampov Loun	2	27	24470
		Phnom Prek	3	40	46945
		Kam Reang	3	48	39528
	Battambang	Samlot	4	56	32254
		4	12	171	143197
Pailin	Pailin	Pailin	2	51	31959
		Sala Krao	3	60	26253
		2	5	111	58212
Pursat	Sampov Meas	Veal Veng	2	23	10769
		1	2	23	10769
Kampot	Chhouk	Chum Kiri	4	49	55570
		1	4	49	55570
Total: 4	5	8	23	354	26,7748

*

Zone 2-Target area and population

	ODs Total	ADs Total	HC/HP	Population Total	Population (< 2km of forest)
Battambang	5	12	74	754,248	150,258
Banthey Mean Chey	4	8	53	650,812	74,113
Pursat	2	6	31	417,932	77,884
Oddor Mean Chey	1	5	14	126,015	117,105
Preah Vihear	1	7	13	130,902	126,871
Koh Kong	2	8	14	132,106	93,380
Kampot	4	8	47	418,515	132,365
Kampong Speu	3	7	50	576,538	105,344
Siem Reap	4	13	43	816,173	138,696
Total	**26**	**74**	**339**	**4,023,241**	**1,016,016**

Border collaboration with Vietnam

- Anthropology study
- The project supported by ITM, Belgium
- Project site in Rattanakiri

Activities after the ACTMalaria Training Courses

Malaria Microscopy and QA

- ✓ Provided training on basic laboratory and quality control for lab technician from HCs and hospitals in Pailin and Oddar Meachey provinces.
- ✓ Carried out the laboratory monitoring as well as on-the-job training in 17 laboratories of public health facilities at four target provinces. Monitoring checklists were used for the follow up.
- ✓ Cross check 263 blood slides were collected from 17 lab facilities for quality control.
- ✓ Conduct assessment on:

  - General lab and supplies managementent
  - Lab capacity staff checking
  - Malaria quality control by QC cross-checking in 17 laboratories
  - Lab materials & equipment availability and supply



Activities after the ACTMalaria Training/workshop

Pharmaceutical Management of Malaria

- ✓ Established the drug coordinators in all levels for an effective drug delivery system, especially for the containment project by collaboration with DDF&CMS.
- ✓ Organized Drug management training for provincial, OD and HC
- ✓ Conduct the drug supply chain assessment with expert from Clinton Foundation.
- ✓ Consultative meetings for partners for the drug supply chain management.
- ✓ Developed the new format for the drug distribution to community through VMWs.
- ✓ Monitored and assessed the drug management in the public health facilities and collected the drug sample from the private outlet.

Activities after the ACTMalaria Training Courses

Vector Control Management

- Provide the coordination to the provincial staff
- Set up the provincial network for the future pilot integration of VIM.
- Training on entomology basic skill to provincial staff.
- Entomological survey
- Insecticide monitoring.
- In the field and insectary.
- Trap evaluation.

THANK YOU!