



**malaria
consortium**
disease control, better health

Vector Management for Dengue Control in Cambodia

Impact of socio-ecological systems and resilience (SESR)-based strategies on dengue vector control in schools and neighbouring household communities

WHO/TDR program 2018 - 2020

Overview of MC work in dengue across Cambodia:

1. Knowledge, attitudes, and practices (KAP) survey related to dengue prevention across 6 provinces
2. Insecticide resistance of dengue vector across Cambodia (with IPC)
3. Cluster randomised trial to evaluate field efficacy of **guppies** and community engagement on dengue vectors (Kampong Cham)

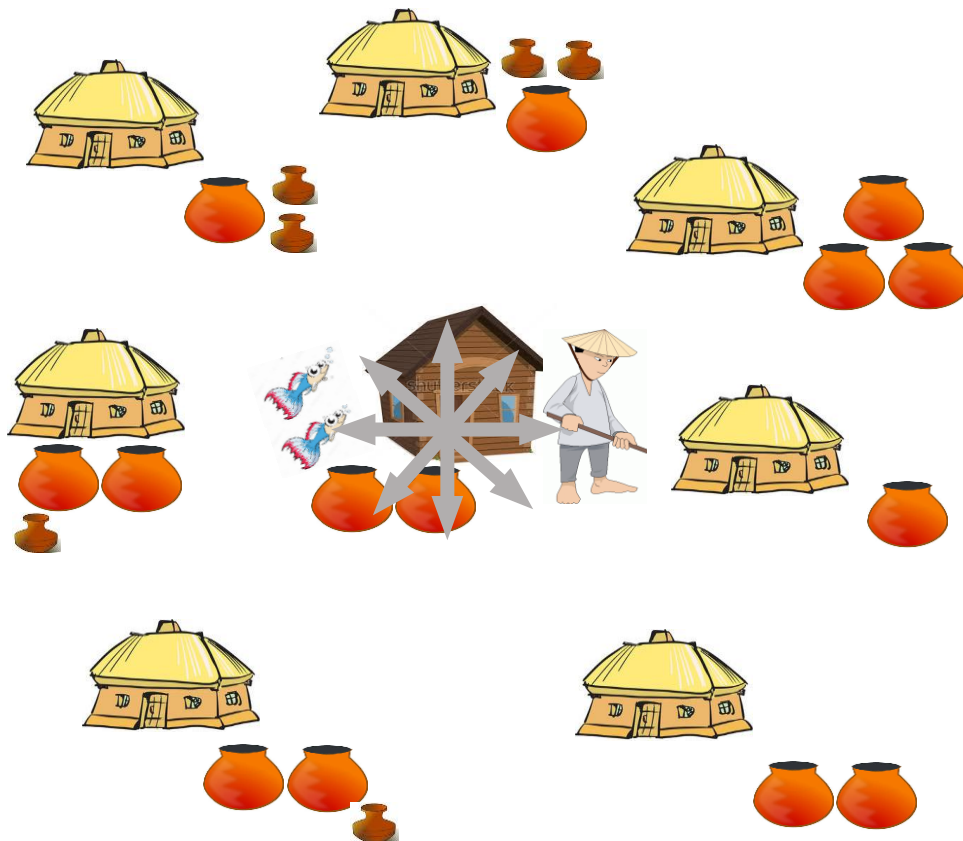


Method for guppy project 2015-2016

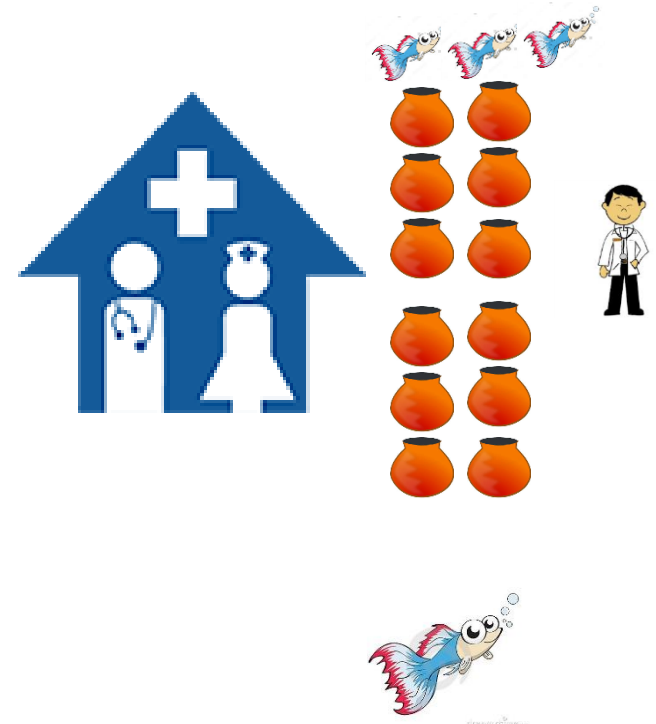
Distribution & Coverage



Intervention Village



Health Center Guppy Bank



Communication for Behavioural Impact (COMBI) activities



Vanney Keo (វណ្ណឌី ណៃ)



Vanney Keo (វណ្ណឌី ណៃ)



Vanney Keo (វណ្ណឌី ណៃ)



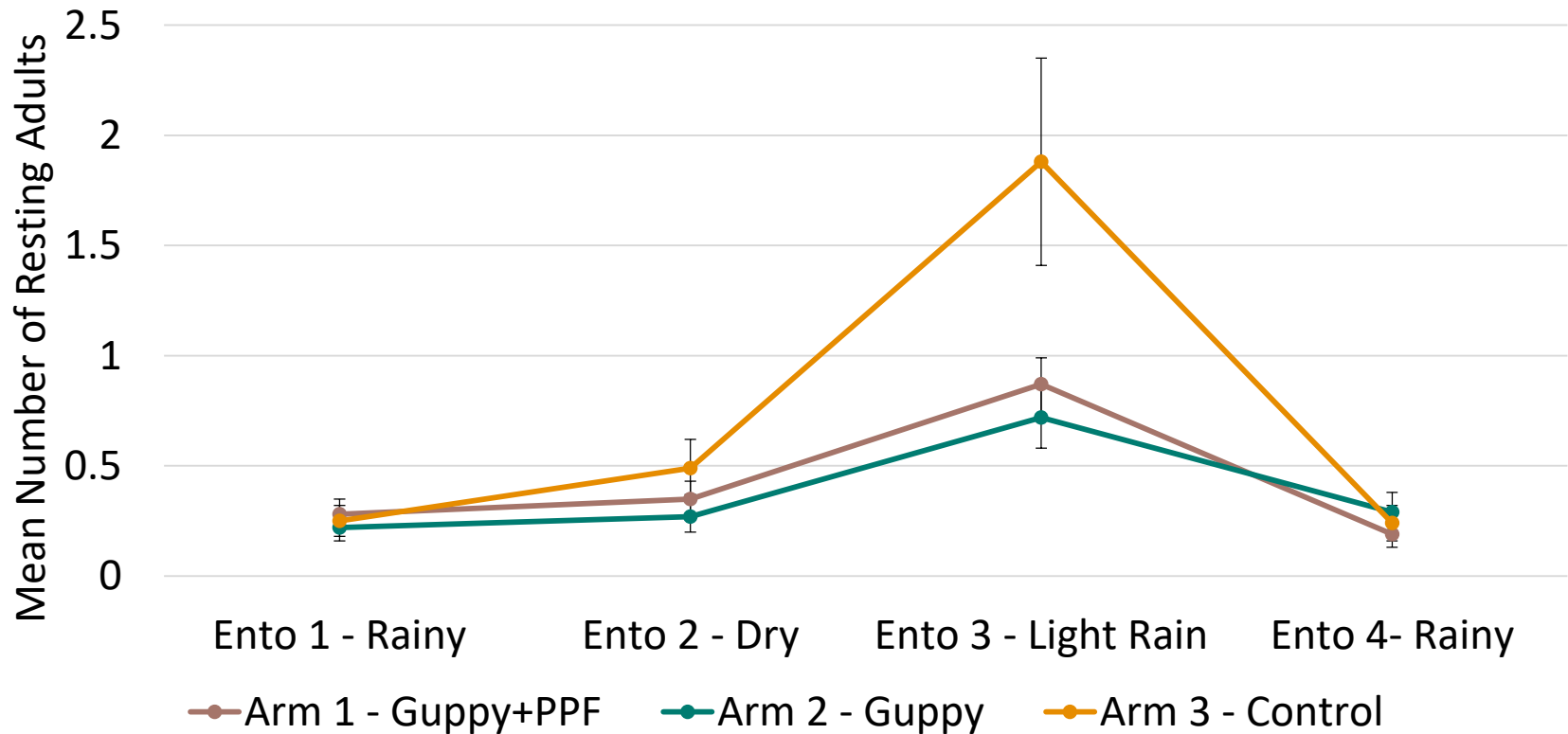
Vanney Keo (វណ្ណឌី ណៃ)

Using tuk tuks with messages

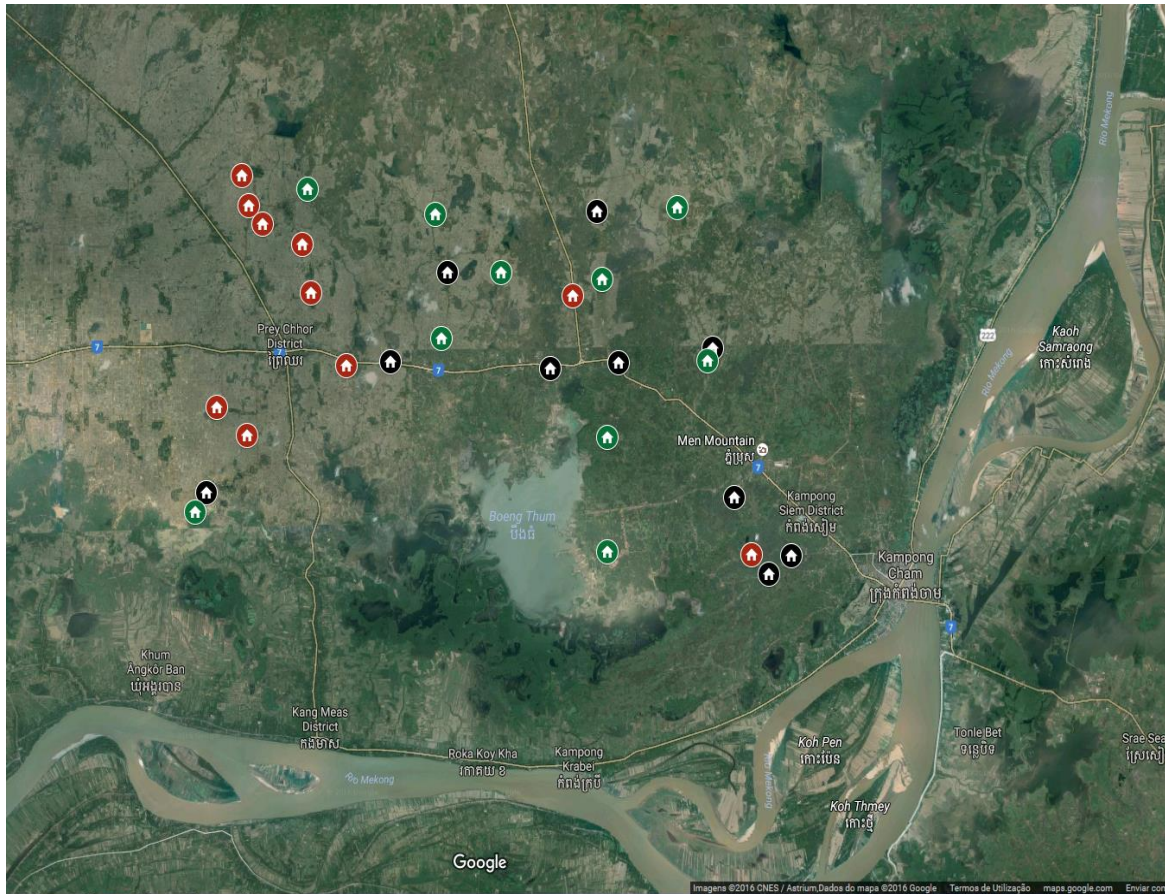


Entomological impact

Figure 1: Mean Number of Adult Aedes Females per Household by Arm and Survey



New WHO/TDR supported project for dengue control in schools and communities 2018-2020



Kampong Cham was initially selected as it has one of the highest per-capita dengue burden in Cambodia, and is ecologically similar to other endemic areas

No overlap with ECOMORE project

Types of intervention for the study

Intervention type	Intervention Component	Intervention short description
Biophysical	Vector control	Autocidal gravid ovitraps (AGO) – see Annex 1
	Biological control	Guppy distribution – see Annex 11
	Solid waste management	Larval source control through improved solid waste management
Empowerment/Adaptive-capacity	Education and training	Place-based educational campaign on dengue disease; vector biology; ecology, and control; role of solid waste, clean water & health relationships
	Communication & Behaviour Change	Communication for Behavioural Impact using multipronged communication channels including interpersonal communication through volunteers, folk or local media and mass media.
	Participatory mapping	Map co-creation as a tool for community ownership of dengue decentralized surveillance and management

Arm 1: biophysical interventions only

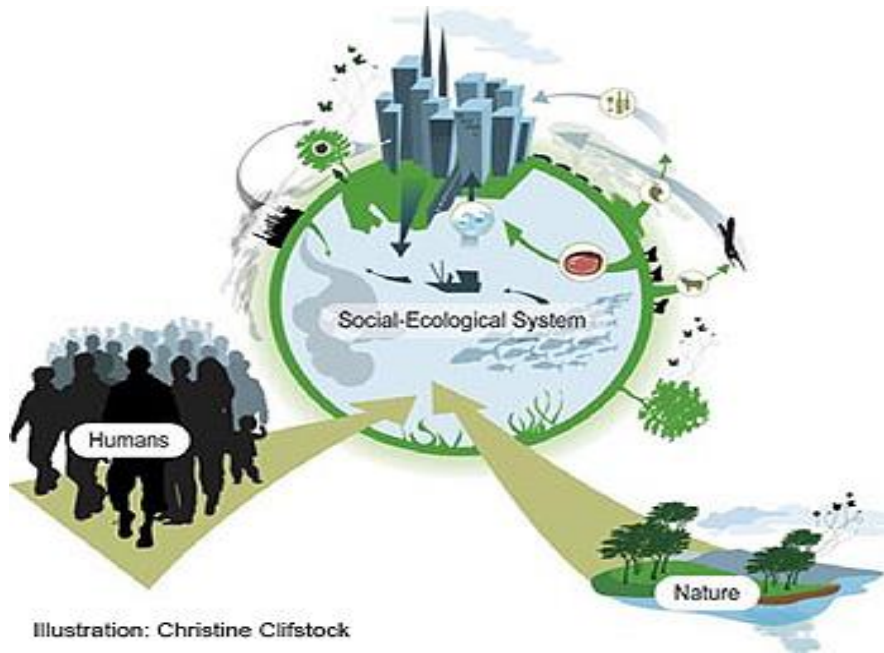
Arm 2: biophysical and empowerment interventions

Arm 3: control – no intervention

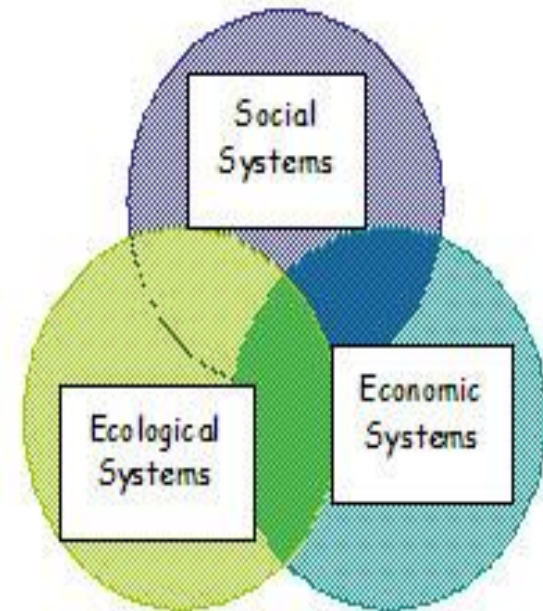
Why an Socio-Ecological System and Resilience (SESR) approach for dengue control?

- Absence of effective therapeutics and vaccines; an **increasing need for novel vector control and management strategies** to respond to dengue,
- Changing conditions : emergence and persistence of these diseases (eg. population growth, land use change, climate change, insecticide-resistance)- **need for an integrated response** to prevention and control initiatives
- Needs understanding of local social-ecological systems
- Through a transdisciplinary research framework, an SES approach facilitates more comprehensive understanding of disease dynamics, focusing on **interactions between biophysical and social systems**

Socio-Ecological Systems (SES) (cross-disciplinary research)



SUSTAINABLE PRACTICES



Principles of an Ecosystem approach in health care

- 1) Principle 1: Systems Thinking
- 2) Principle 2: Transdisciplinary Research
- 3) Principle 3: Participation
- 4) Principle 4: Sustainability
- 5) Principle 5: Gender and Social Equity
- 6) Principle 6: Knowledge to Action

...and a focus on the 4 interacting sub-systems influencing health



How the TDR project complements the ECOMORE initiative

- Also targeting hotspot for transmission in schools, but **combining both the biophysical and sociological aspects of disease** transmission
- **Collaborating with relevant sectors for dengue control**, eg. district environmental health authority and local city councils to include strategies for solid waste management, including coordinated garbage collection and separation, recycling tins and plastic bottles
- Utilizes novel techniques such as **participatory epidemiology**, eg. co-creation of a map representing contextualised epidemiological dynamics at the landscape level using ento indices measurement, as well as incorporating community understanding and perception of these
- Incorporates strategy for **place-based education pedagogy**, that promotes learning in ‘what is local’, eg. hands-on learning for landscape ecology and localisation and mapping tools of actual and potential breeding sites for aedes mosquitoes, based on what options are available to participants (in addition to research tools) in their unique settings
- **Qualitative components** will include ethnographic methods such as FGDs, IDI’s, participant observation, and participatory research techniques

Expected outcomes

1. Reduce exposure to dengue mosquito vectors in schools, homes and temples by:

- a) **Reducing mosquito entry** to school classrooms by vector and biological controls
- b) **Reducing dengue mosquito breeding** and transmission risk by vector and biological control
- c) **Improving school health education** on dengue prevention through more context-sensitive and community empowering health education and participatory epidemiology

2. Ecosystem approach developed with community:

- a) A system approach with the creation of a common vision across multiple disciplines (integration), i.e. experts from diverse disciplines such as sociology, medical entomology, ecology, anthropology, etc)
- b) Strengthening community participation comprising representation, involvement, partnership, empowerment and autonomy
- c) Implementing, a place-based education strategy that is intended to promote learning

Core study objectives

1. To **implement school-centred, ecosystem-based innovative tools and approaches** to address the challenge of dengue control
2. To undertake **appropriate, tailored training activities for research capacity building**, including strengthening the role of women in health outreach programs, technical assistance and advice, information exchange and dissemination, quality control, guidelines and SOPs, good laboratory practice, and monitoring and evaluation strategies
3. To **facilitate the uptake of new knowledge and research** results through translation of research for best practice and influence on policies

Partnership

- WHO/Tropical Disease Research program
- MoH/CNM
- Ministry of Education
- Institute Tropical Medicine Antwerp
- Local communities and local authorities
- Schools teachers and parents
- Religious leaders
- ...

Thank you

malaria
consortium
disease control, better health



www.malariaconsortium.org