

# Development of a *Global vector control response*

GMP/NTD/TDR

Global **Malaria** Programme  
Department of Control of **Neglected Tropical Diseases**  
Special Programme for **Research and Training** in Tropical Diseases



**World Health  
Organization**

# Background

# High level acknowledgement of the importance of vector control

... above all, the spread of Zika, the resurgence of dengue, and the emerging threat of Chikungunya are the price being paid for a **massive policy failure that dropped the ball on mosquito control in the 1970s.**

**Margaret Chan**

Director-General World Health Organization

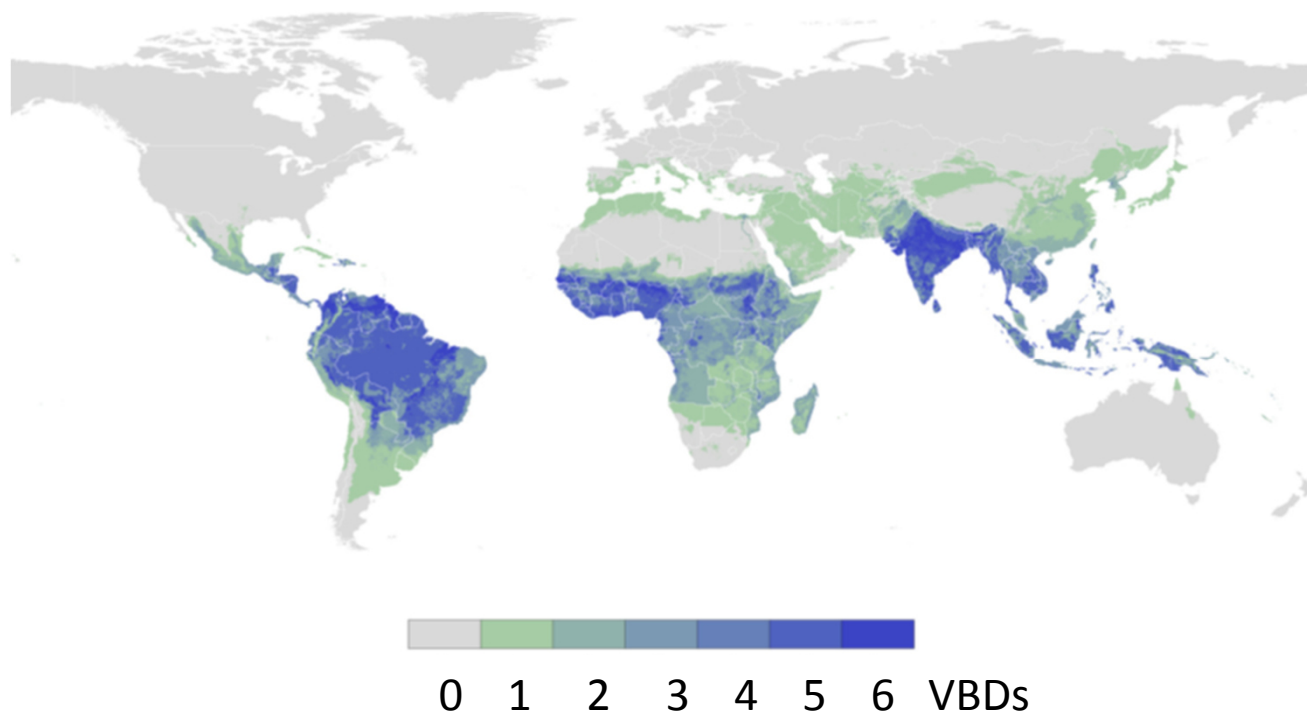
*Opening Address at World Health Assembly 69th session*

*May 2016*

# Global burden of vector-borne diseases

Vector	Disease	Estimated or reported annual cases	Estimated annual deaths	Estimated annual DALYs
<b>Mosquitoes</b>	Malaria	214 000 000	438 000	55 111 000
	Dengue	96 000 000	9110	1 143 000
	Lymphatic filariasis	43 850 000	NA	2 022 000
	Chikungunya (Americas)	693 000	NA	NA
	Zika virus disease (Americas)	500 000 suspected, 2015	NA	NA
	Yellow fever (Africa)	130 000 suspected, 2016	500	31 000
	Japanese encephalitis	42 500	9250	431 552
<b>Blackfly</b>	Onchocerciasis	16 956 400	NA	1 180 000
<b>Sandfly</b>	(Muco) cutaneous leishmaniasis	3 915 000	NA	42 000
	Visceral leishmaniasis	114 000	62 500	4 242 000
<b>Triatomine bugs</b>	Chagas disease	9 434 000	10 600	339 000
<b>Tick</b>	Lyme borreliosis (USA)	85 500	NA	NA
	Tick-borne encephalitis (North Eurasia)	14 000	NA	NA
<b>Tsetse fly</b>	Human African trypanosomiasis	19 700	6900	390 000
<b>Various</b>	Rift Valley fever, O'nyong nyong virus, Mayaro virus, Crimean-Congo haemorrhagic fever, rickettsial diseases, plague			

# Global distribution of major vector-borne diseases



Combined global distribution of malaria, dengue, lymphatic filariasis, leishmaniasis, Japanese encephalitis, yellow fever and Chagas disease.

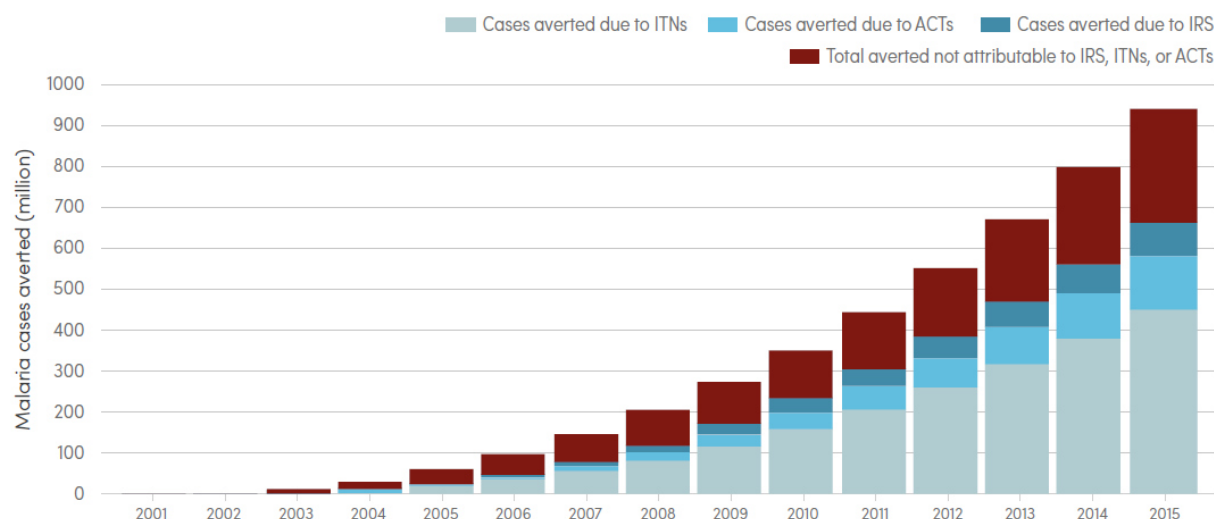
Today more than **80% of the world's population is at risk** from at least one VBD, with more than half at risk from two or more.

Golding et al. (2015) PLoS NTDs

# Major gains made against malaria through vector control

- A cumulative 1.2 billion fewer malaria cases and 6.2 million fewer malaria deaths resulted globally between 2001 and 2015 relative to 2000.
- Yet current activities are insufficient to eliminate malaria from SSA – need for improved implementation, additional tools & strategies

**Figure 3.19 Predicted cumulative number of malaria cases averted by interventions, sub-Saharan Africa, 2000–2015**



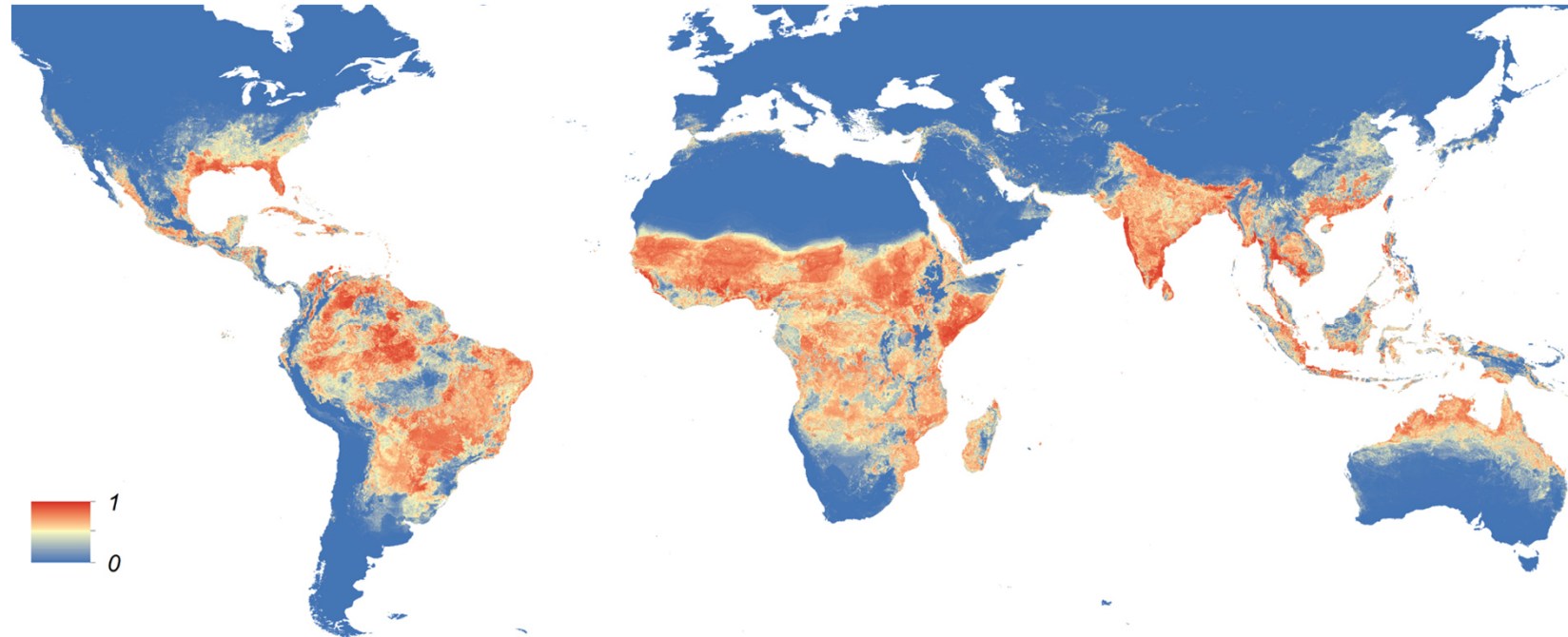
ACT, artemisinin-based combination therapy; IRS, indoor residual spraying; ITN, insecticide-treated mosquito net

Source: Malaria Atlas Project (18) estimates of cases averted attributable to ITNs, ACTs, and IRS and WHO estimates of total cases averted

In sub-Saharan Africa, 70% of reductions were attributed to interventions. Of this, 69% was attributed to ITNs, 21% to ACTs and 10% to IRS.

# *Aedes*-borne diseases: an increasing challenge

Global map of the predicted distribution of *Ae. aegypti*. (Kramer et al. 2015)



- Due to unplanned urbanization, movement of people and goods, climate change
- Underscores the need for delivery of *broad, preventive* health services, particularly in urban areas
- Traditional vector control can be made more effective, but novel tools are needed

# Challenges

- **Systemic:** insufficient public health entomological capacity including human and infrastructural
- **Structural:** strong central programme lacking, synergies not leveraged and resources utilization not optimized
- **Informational:** weak evidence-base and poor linkage of entomological, epidemiological and intervention data
- **Environmental:** unpredictable, uncontrollable and complex changes
- **Movement of humans and goods:** increased global movement due to travel, migration, displacement, trade
- **Political and financial:** limited funds committed and sustained beyond malaria



# Opportunities



- **Development:** align with Sustainable development goals
- **Recognition:** importance exemplified in existing regional and global VBD strategies
- **Expansion:** build on successes of malaria, onchocerciasis and lymphatic filariasis control
- **Optimization:** re-align across multiple vectors, diseases, sectors, partners
- **Collaboration:** build on existing networks
- **Adaptation:** build flexible systems to address specific conditions and challenges
- **Innovation:** new tools, technologies and approaches on the horizon
- **Technology:** advances in data collation aid planning and implementation

# Rationale for a global vector control response (1)

- Major vector-borne diseases account for an estimated 17% of the global burden of all infectious diseases, and disproportionately affect poor populations.
- These diseases impede economic development through direct medical costs and indirect costs such as loss of productivity and tourism.
- Social, demographic and environmental factors have caused increases in many vector-borne diseases in recent years, with major outbreaks of dengue, malaria, chikungunya, yellow fever and Zika virus disease since 2014.
- Most vector-borne diseases are preventable by vector control if well implemented. Strong political commitment and significant investments have led to major reductions in malaria, onchocerciasis and Chagas disease.

## Rationale for a global vector control response (2)

- The full impact of vector control has yet to be achieved owing to inadequate delivery of interventions and limited investments resulting from a dire lack of public health entomology capacity, poor coordination within and between sectors, weak or non-existent monitoring systems and few proven interventions.
- Flexible vector control delivery and monitoring systems that support approaches tailored to local contexts are urgently needed along with new tools and approaches. This will necessitate re-alignment of national programmes as well as enhanced capacity and funding.

# Beyond integrated vector management (IVM)

Full uptake implementation of IVM has generally been poor due to :

1. Complexity of communicating IVM
2. Limited human capacity to advocate, plan and implement
3. Fragmented global and national architecture that restricts multi-disease approach (e.g. disease-specific strategies and financing)
4. Insufficient political buy-in for reorientation and harmonization

= GVCR will go beyond IVM, and will be **simple, practical and actionable**

# Development of a global vector control response (GVCR)

Led by:

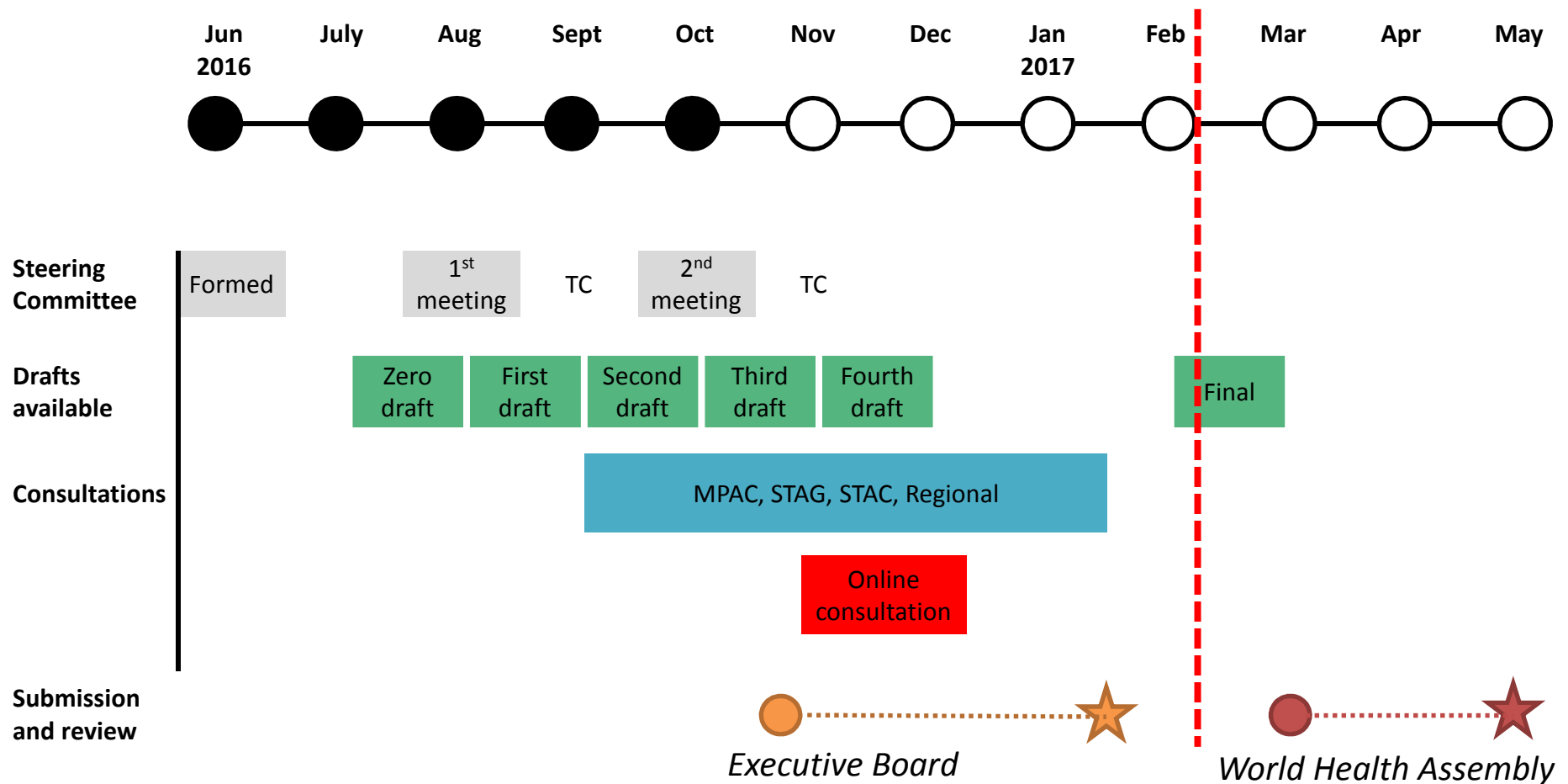
WHO Global Malaria Programme

WHO Department for Control of Neglected Tropical Diseases

Special Programme for Research and Training in Tropical Diseases

# Development timeline

**Status:** Fourth draft (v.4.3) currently being updated based on feedback from the online Executive Board 140<sup>th</sup> session (held 28 January 2017)



# Involved in development thus far

Lead	GMP, NTD, TDR
Steering Committee	Co-Chairs: Prof. Thomas Scott, Dr Ana Carolina Santelli Other leading experts
WHO regional focal points	AFRO, EMRO, EURO, PAHO, SEARO, WPRO
Presented for discussion at:	<ul style="list-style-type: none"><li>• Initial consultation on response, Johannesburg</li><li>• Asia-Pacific Malaria Elimination Network meeting, Bangkok</li><li>• African Network for Vector Resistance meeting, Brazzaville</li><li>• DDT expert group meeting, Geneva</li><li>• Global Collaboration for Development of Public Health Pesticides meeting, Geneva</li><li>• Pan-African Mosquito Control Association 3<sup>rd</sup> meeting, Lagos</li><li>• International Congress of Entomology, Florida</li><li>• WHO Vector Control Advisory Group meeting, Geneva</li><li>• PAHO Vector Control Strategic Advisory Group, Washington</li><li>• Information session for Member State missions, Geneva</li></ul>
Online consultation	Responses from Member States, research/academia, private sector, donor agencies, other UN agencies, NGOs (n = 80)

# Global Vector Control Response

## 4<sup>th</sup> draft

**Vision:** A world free of human suffering from vector-borne diseases.

**Aim:** Reduce the burden and threat of vector-borne diseases through effective locally adapted and sustainable vector control.



# Goals

Goals	Milestones		Targets
	2020	2025	2030
<b>Reduce mortality due to vector-borne diseases globally relative to 2016</b>	At least 30%	At least 50%	At least 75%
<b>Reduce case incidence due to vector-borne diseases globally relative to 2016</b>	At least 25%	At least 40%	At least 60%
<b>Prevent epidemics of vector-borne diseases*</b>		In all countries without transmission in 2016	In all countries

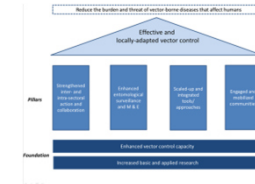
*\* Rapid detection of outbreaks and curtailment before spread beyond country.*

- Apply to all major vector-borne diseases of humans
- It is anticipated that countries will set their own national or subnational targets. Region-specific targets may also be set

# Foundation

## Resilient and sustainable vector control systems require:

- Enhanced vector control capacity and capability within all locally relevant sectors (including human, infrastructural, and health systems);
- Increase basic and applied research, and innovation.



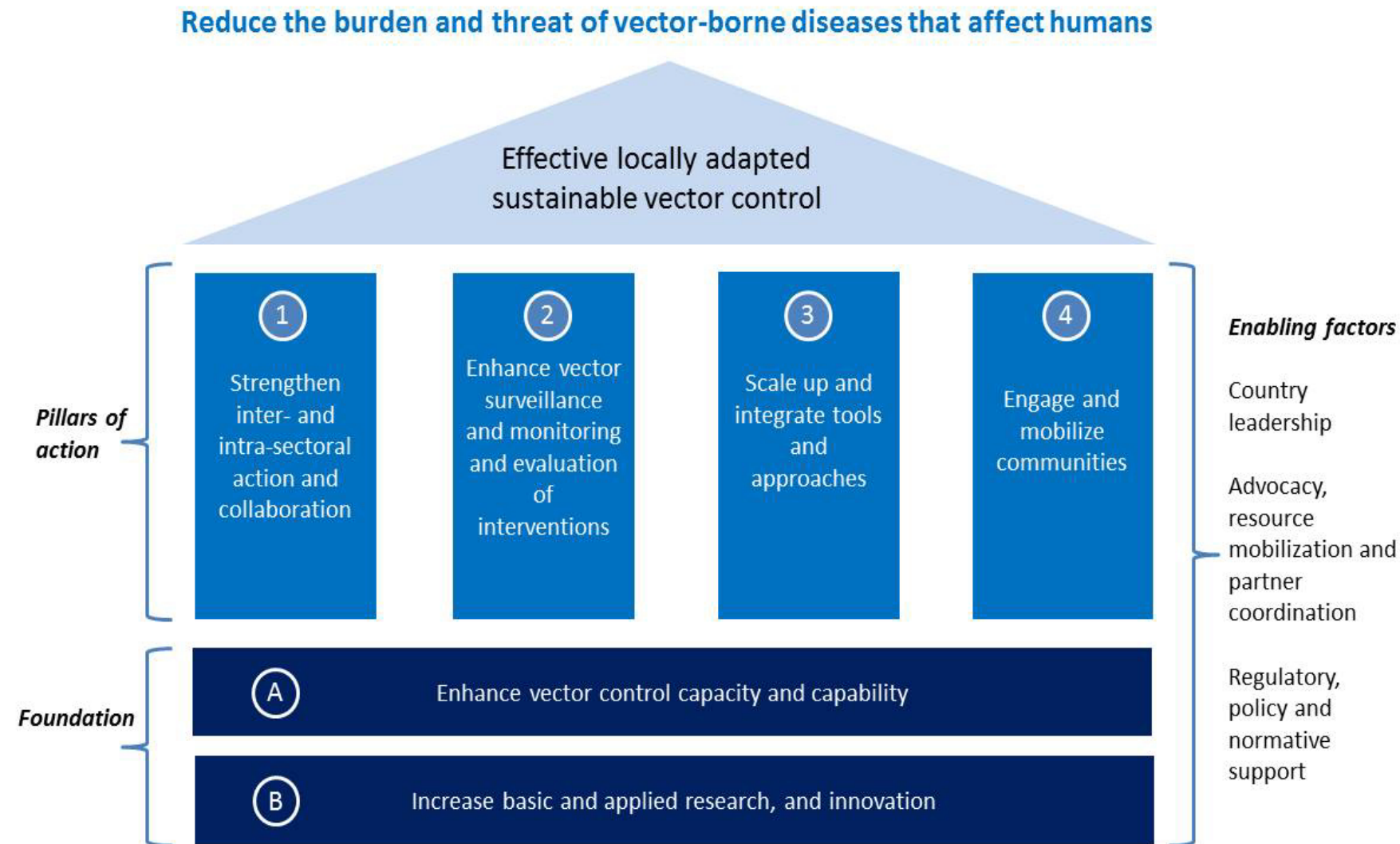
# Pillars of action

- Strengthen intra- and inter-sectoral action and collaboration;
- Enhance vector surveillance, and monitoring and evaluation of vector control interventions;
- Scale up and integrate tools and approaches;
- Engage and mobilize communities.

# Enabling factors

- Country leadership;
- Advocacy, resource mobilization and partner coordination;
- Regulatory, policy and normative support.

# Framework overview



# Priority activities for 2017 – 2022\* (1-5 of 10)

- **National and regional vector control strategic plans developed/adapted to align with draft *global vector control response***
  1. National vector control needs assessment conducted or updated and resource mobilization plan developed (including for outbreak response)
  2. National entomology and cross-sectoral workforce appraised and enhanced to meet identified requirements for vector control, including for epidemic response
  3. Relevant staff from health ministries or supporting institutions trained in public health entomology
  4. National and regional institutional networks to support training and/or education in public health entomology and technical support established and functioning

*\* To be revised and updated for the subsequent period of 2023–2030.*

## Priority activities for 2017 – 2022\* (6-10 of 10)

5. National agenda for basic and applied research on entomology and vector control established and/or progress reviewed
6. National inter-ministerial task force for multisectoral engagement in vector control established and functioning
7. National vector surveillance systems strengthened and integrated with health information systems to guide vector control
8. National targets for protection of at-risk population with appropriate vector control aligned across vector-borne diseases
9. National plan for effective community engagement and mobilization in vector control developed

*\* To be revised and updated for the subsequent period of 2023–2030.*

# Status

- **Third draft** (version 3.1) used in online consultation 1 – 30 November 2016
  - Downloaded by > 200 people
  - Detailed feedback provided by 80 individuals/institutions including Ministries of Health, research/academia, donor agencies, NGOs, private sector, other UN agencies (VCWG).
- **Fourth draft** currently available online:  
<http://www.who.int/malaria/global-vector-control-response/en/>
  - Considered by WHO Executive Board 28 January 2017 – currently being updated to reflect requests and comments by Member States
- **Fifth draft** to be considered by World Health Assembly in May 2017



# Concluding points

- Country leadership of prevention and control efforts is critical.
- Policies and activities should not be limited to the health sector and should always be evidence-based.
- Action within countries and between countries should be harmonized and strengthened.
- Adoption of novel tools when validated for operational use is encouraged.
- Aim is to ensure all countries can achieve success, irrespective of their current disease burden, capacities and resources.
- Emphasis on integrated, community-based approaches.

THANK YOU FOR ALL THE SUPPORT