

WORLDWIDE INSECTICIDE RESISTANCE NETWORK (WIN)

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Florence FOUQUE,
Vectors Environment and Society Unit



For research on
diseases of poverty
UNICEF • UNDP • World Bank • WHO



World Health
Organization

VECTORS, ENVIRONMENT AND SOCIETY UNIT

VES Context: Vector-Borne Diseases (VBD) represent a major source of illness in poor countries. Environment and society have major influences on the transmission of these and on their vectors.

VES Impact Goal: Communities have enhanced access to improved control interventions that ultimately contribute to decreased transmission and disease burden.

VES Activities: Promote research - Build capacity - Collaborate with countries and institutions

HOW WE HELP COUNTRIES TO ACHIEVE DISEASES CONTROL ?

Scientific Knowledge: Generation of scientific evidence relevant to the vector-borne diseases affecting poor and vulnerable populations



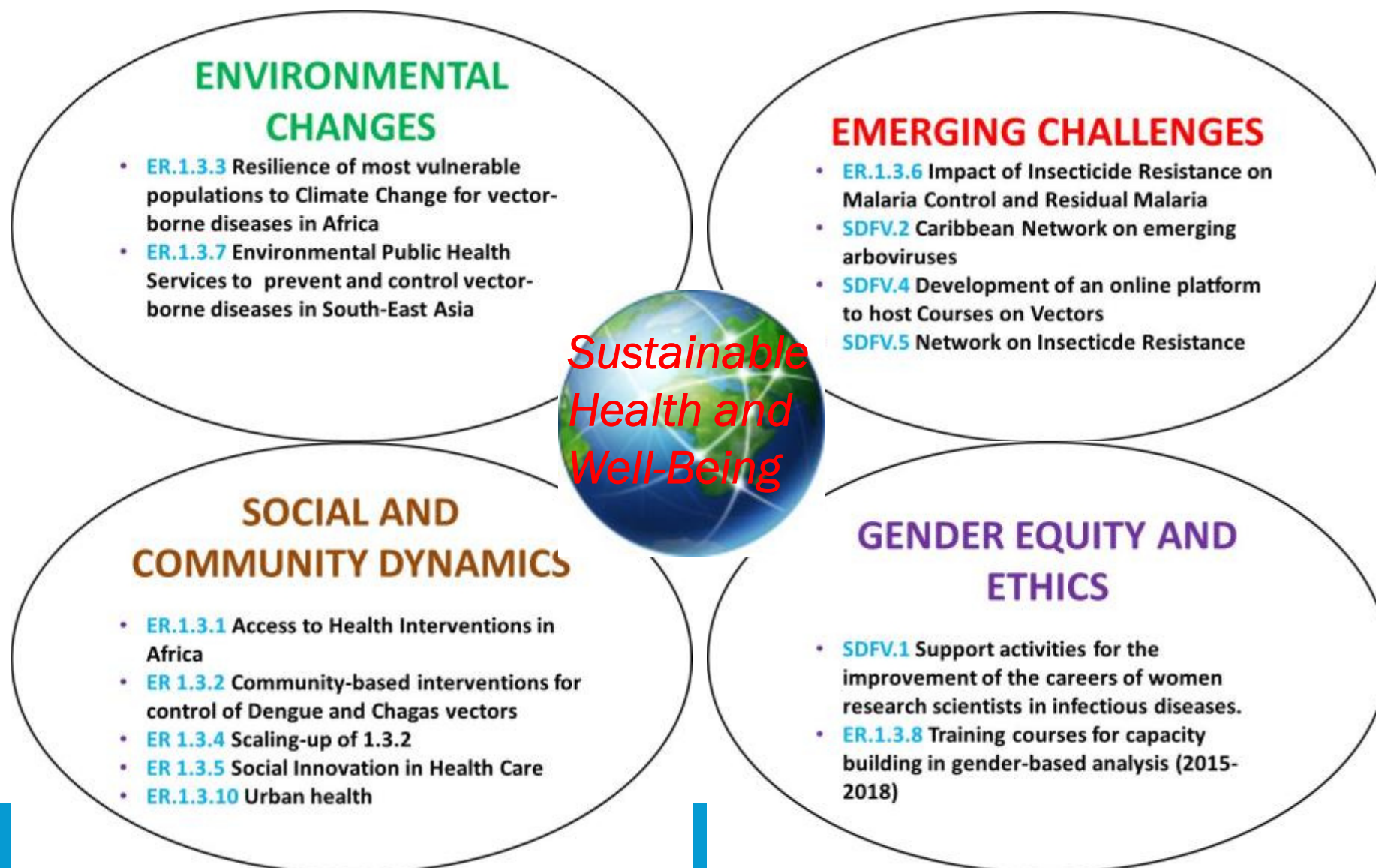
Facilitation of Collaboration and exchange through Networks: Vector-Borne Diseases are not limited by national frontiers and it is imperative that countries work together to achieve prevention, surveillance and control

Capacity Building: All projects include support for students and training for health professionals, from community level to stakeholders.



Policy Recommendations: Research results and scientific evidences have to be translated/implemented into feasible recommendations and policies.

VES WORK STREAMS AND PROJECTS



STATUS, LEVEL OF INSECTICIDE RESISTANCE IN *AEDES AEGYPTI*

Our knowledge of resistance distribution has not strongly progressed since Ranson et al., 2008.

Our knowledge of impact of resistance on vector control efficacy has very rarely being investigated.

Figure 2A: Distribution of published reports of temephos resistance and susceptibility in *Aedes aegypti*

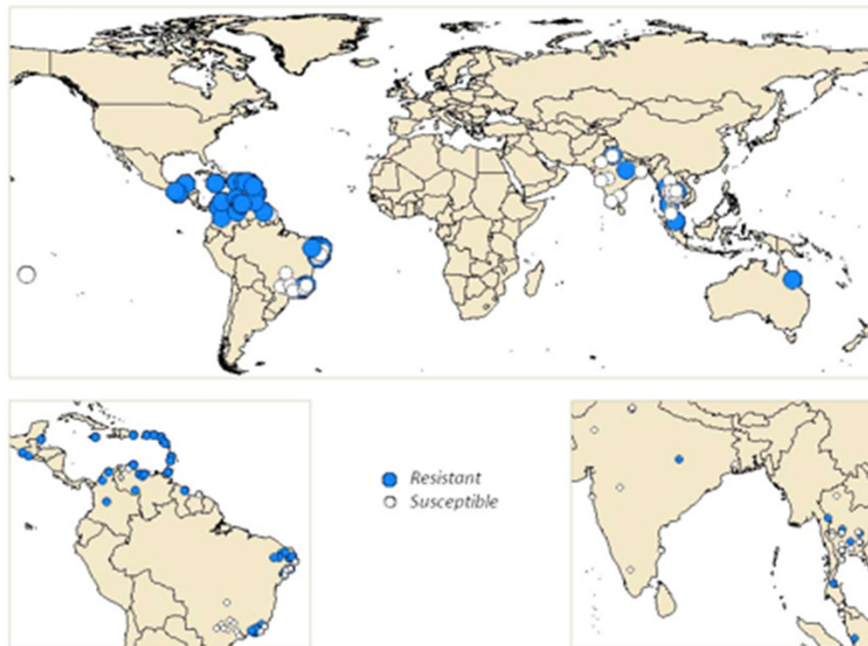
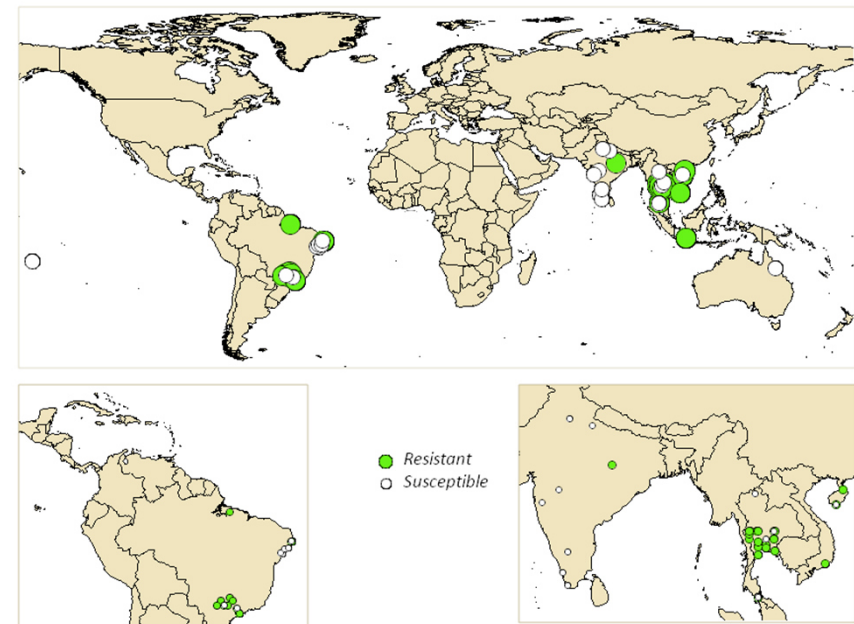


Figure 2B: Distribution of published reports of pyrethroid resistance and susceptibility in *Aedes aegypti*

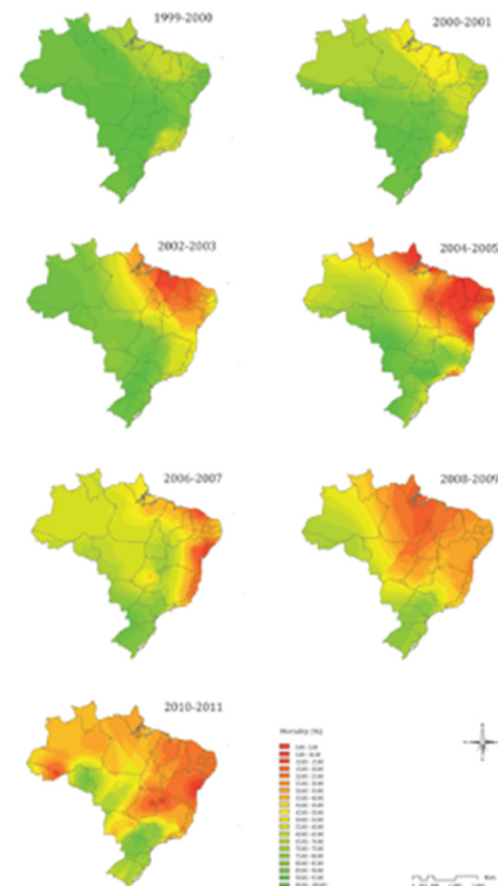


CONSEQUENCES OF INSECTICIDE RESISTANCE IN *Aedes Aegypti*

What is the relationships between insecticide resistance, failure of vector control, and incidence of Zika-related microcephaly incidence ?



Temephos resistance in *Ae. Aegypti* • Mateus Chediek et al.



NETWORK ON SURVEILLANCE OF INSECTICIDE RESISTANCE AND ALTERNATIVE METHODS FOR CONTROLLING VECTORS OF ARBOVIRUSES

Call for applications

Selection of a consortium of institutions for the organization of a workshop and commissioned reviews to develop an international network on surveillance of insecticide resistance and alternative methods of vector control for vectors of emerging arboviruses

Deadline for submission: 23 October 2015, 17:00 CET

Institutions working on monitoring the insecticide resistance and the development of innovative vector control approaches for the **vectors of emerging arboviruses** are invited to submit collaborative proposals to organize and host a workshop, as well as commissioned reviews for evidence on the current knowledge and gaps in insecticide resistance for vectors of emerging arboviruses such as Dengue, Chikungunya and Zika viruses. The proposal should also include some review of alternative methods of vector control and the expected results should present the requirements and feasibility of the implementation of an international surveillance and research network on surveillance of vectors of emerging arboviruses.

The proposal should include at least two to three institutions based in low and middle income countries (LMIC) and in different WHO regions. The workshop will be co-organized by the consortium of institutions and will be hosted by one institution. The commissioned reviews can be selected by the different institutions of the consortium. However, only one or two institutions of the consortium will be leader(s) of the activity.

This call is in support of the development of a new strategic activity for the Vector Environment and Society Unit of TDR in partnership with the Neglected Tropical Disease (NTD) Department of WHO, to better organize the surveillance of insecticide resistance of the vectors of arboviruses and develop new vector control alternatives.

Under this call, only **one multi-country proposal** will be selected for funding for one year for a **maximum total funding of US\$ 200 000**.



WIN NETWORK SELECTED IN NOVEMBER 2015

Consortium selected in November 2015 (10 countries, 6 DEC's)

To provide 5 commissioned reviews and a workshop to set research priorities.

Workshop held in December 2016, in Brazil.

Americas	Europe	Africa	Eastern Mediterranean	South-East Asia	Western Pacific
French Guiana	France	Ivory coast	Iran	Thailand	Laos PDR
Guadeloupe, Saint-Martin islands	Portugal & Madeira	Benin	Pakistan	India	Cambodia
Brazil	Italy	Cameroon	Sudan	Myanmar	Singapore
Surinam	Turkey	Mayotte island	Yemen	Sri Lanka	Viet Nam
USA	Greece	Central African Republic	Somalia	Indonesia	New Caledonia, Fiji and Tonga islands
Colombia		Madagascar	Djibouti		Australia
Peru		Mali			Malaysia
Martinique island		Cabo Verde			French Polynesia (Tahiti)
Belize		Angola			Philippines
Mexico		Mozambique			



WIN ACTIVITIES

([HTTPS://WIN-NETWORK.IRD.FR](https://win-network.ird.fr))

- *Identify areas where resistance challenges vector control and where resistance is under-reported*
- *Fill knowledge gaps on insecticide resistance in arbovirus vectors through commissioned reviews, and participate to the discussion on research priorities.*
- *Assist national authorities (WHO) in decision-making for insecticide resistance management and deployment of alternative control tools*

THE WORLDWIDE INSECTICIDE RESISTANCE NETWORK – KICK-OFF MEETING, MAY 2015

The Worldwide Insecticide resistance Network

The WIN proposes to bring together internationally recognized institutions in vector research, providing an unique framework for tracking and combating insecticide resistance in mosquito vectors of arboviruses worldwide.

→ WHO WE ARE



15 research partners across the world including 5 LMICs (Iran, Thailand, India, Brazil, Mali) with complementary expertise in insecticide resistance (from vector biology and control to resistance diagnostic tools and spatial modeling).

→ WHAT WE DO

- Identify areas where resistance challenges vector control and where resistance is under-reported
- Assist national authorities (WHO) in decision-making for insecticide resistance management and deployment of alternative control tools
- Fill knowledge gaps on insecticide resistance in arbovirus vectors through commissioned reviews



<http://win-network.ird.fr>

Kick-off meeting of the WIN, May 23-25 2015, Montpellier © IRD/C. Durot

Contact: winprojectoffice@ird.fr
Prs V. Corbin (IRD) & J.P. David (CNRS)



THE WORLDWIDE INSECTICIDE RESISTANCE NETWORK – WORKSHOP, DECEMBER 2015

Held in Rio de Janeiro, Brazil from December 5 to 8, 2016, the workshop attracted about **160 people** representing all **6 World Health Organization regions**, **30 nationalities** and a huge **73 000 live web viewings**.

 INTERNATIONAL WORKSHOP on "Insecticide resistance in vectors of emerging arboviruses: Challenge and prospects for vector control" 05 – 08 December 2016, Windsor Marapendi, Rio de Janeiro, BRAZIL	
Schedule and program of the International workshop	
December 05th 2016 - Windsor Marapendi -	
08:15-08:50 Registration & welcoming of participants	
08:50-09:30 Workshop opening: Welcoming addresses	
Room: Jurunas I + Nauas I	
08:50-08:55	Welcome address from the Brazilian Ministry of Health Dr. Ana Carolina Santelli, Coordinator of vector borne diseases Program, Brazil
08:55-09:00	Welcome address from the Oswaldo Cruz Institute Dr. Eliane Veiga da Costa, Vice-director, Oswaldo Cruz Institute, Brazil
09:00-09:05	Welcome address from the French Ministry of Foreign Affairs in Brazil Mr. Brice Roggefeull, Consul general of France, Brazil
09:05-09:10	Welcome address from the World Health Organization Neglected Tropical Diseases Department Dr. Raman Velayudhan, Coordinator of vector ecology and management, Switzerland
09:10-09:15	Welcome address from the World Health Organization Tropical Diseases Research programme Dr. Florence Fouque, Team Leader on vectors, Switzerland
09:15-09:20	Welcome address from the Pan American Health Organization Dr. Haroldo Bezerra, Advisor Public Health Entomology, USA
09:20-09:30	Objectives of the workshop and presentation of the Worldwide Insecticide resistance Network Dr. Ademir Martins, Oswaldo Cruz Institute, Brazil Dr. Vincent Corbel, Institut de Recherche pour le Développement, France

 INTERNATIONAL WORKSHOP on "Insecticide resistance in vectors of emerging arboviruses: Challenge and prospects for vector control" 05 – 08 December 2016, Windsor Marapendi, Rio de Janeiro, BRAZIL	
December 05th 2016 (continued)	
14:00-17:45 Scientific Session 2: Insecticide resistance in arbovirus vectors	
Room: Jurunas I + Nauas I	
Chair persons: Dr. Catherine Moyes [Oxford U.] / Dr. Mamadou Coulibaly [USTTB]	
14:00-14:30	Status of insecticide resistance in arboviruses vectors in Europe Dr. Beniamino Caputo, Sapienza University of Rome, Italy
14:30-14:40	Current status of insecticide resistance in <i>Aedes aegypti</i> and <i>Aedes albopictus</i> in the African region Dr. Mamadou Coulibaly, University of Sciences, Techniques and Technologies of Bamako, Mali
14:40-14:50	Status of resistant of <i>Aedes aegypti</i> and <i>Aedes albopictus</i> to different insecticides in Eastern Mediterranean Region Dr. Hassan Vatandoost, Tehran University of Medical Science, Iran
14:50-15:00	Status of insecticide resistance in arboviruses vectors in China Dr. Feng Xia Meng, Chinese Center for Disease Control and Prevention, China
15:00-15:10	Status of insecticide resistance in arboviruses vectors in India Dr. Kanaraju Raghavendra, National Institute for Malaria Research, India
15:10-15:20	Strengthening integrated vector management in the Americas: The challenge of insecticide resistance and next steps Dr. Haroldo Bezerra, Pan American Health Organization, USA
15:20-15:30	Status of insecticide resistance in arboviruses vectors in South America Dr. Constança Ayres, Fundação Oswaldo Cruz, Brazil
15:30-15:40	<i>Aedes aegypti</i> Management Strategies for Dengue Control in Cuba Dr. Juan Bisset, Instituto de Medicina Tropical Pedro Kouri, Cuba
15:40-15:50	Discussions
15:50-16:00	Coffee break & Poster session (Foyer)

WIN NETWORK ON SURVEILLANCE OF INSECTICIDE RESISTANCE FOR VECTORS OF ARBOVIRUSES – 2017

Currently 18 Institutions worldwide



OTHER COMMISSIONED REVIEWS TOPICS

1. **Global trends in the use of public health and agriculture pesticides and impact on insecticide resistance in mosquito vectors.**
1. **Insecticide Resistance Management strategies applicable to mosquito vectors.**
1. **Alternative methods for the control of mosquito vectors.**
2. **Defining the global framework for the development of an international consortium for monitoring and management of insecticide resistance in mosquito vectors**

WIN NETWORK WAY FORWARD

- *Assessment of Needs for capacities in insecticide resistance testing*
- *Sustainability and expansion of the Network*
- *WIN role for research and capacity strengthening in the global context*



THANK YOU

