



U.S. PRESIDENT'S MALARIA INITIATIVE



# THE PMI VECTORLINK MADAGASCAR 2018 END OF SPRAY REPORT (EOSR)

SUBMITTED NOVEMBER 30, 2018

Recommended Citation: The PMI VectorLink Project. November 2018. PMI VectorLink Madagascar 2018 End of Spray Report. Rockville, MD. *The PMI VectorLink Project*, Abt Associates Inc.

**Contract Number:** AID-OAA-I-17-00008

**Task Order Number:** AID-OAA-TO-17-00027

**Submitted to:** United States Agency for International Development/PMI

*The views expressed in this document do not necessarily reflect the views of the United States Agency for International Development or the United States Government.*



Abt Associates Inc. | 6130 Executive Boulevard | Rockville, MD 20852  
| T. 301.347.5000 | F. 301.913.9061 | [www.abtassociates.com](http://www.abtassociates.com)

**THE PMI VECTORLINK  
MADAGASCAR  
2018 END OF SPRAY REPORT (EOSR)**

---

# Contents

---

<b>Acronyms.....</b>	<b>viii</b>
<b>Executive Summary.....</b>	<b>ix</b>
<b>1. Introduction.....</b>	<b>11</b>
1.1 Background of IRS in Madagascar .....	11
1.2 2018 Campaign Objectives.....	12
<b>2. Pre-Spray Activities.....</b>	<b>13</b>
2.1 IRS Campaign Planning.....	13
2.1.1 District and Insecticide Selection .....	13
2.1.2 Geographical Reconnaissance in Tulear and Sakaraha .....	14
2.1.3 Micro-Planning.....	15
2.2 Logistics Needs and Procurement.....	16
2.2.1 International Procurement.....	16
2.3 Human Resource Requirements .....	16
2.3.1 Recruitment of Staff.....	16
2.3.2 Payment of Seasonal Workers .....	18
2.4 Training of Seasonal Staff .....	18
<b>3. IEC Mobilization.....</b>	<b>20</b>
3.1 Mobilization Methodology .....	20
3.2 Advocacy.....	20
3.3 Door-To-Door Mobilization.....	21
3.4 Other IEC Activities.....	22
<b>4. IRS IMPLEMENTATION.....</b>	<b>25</b>
4.1 IRS Campaign Schedule .....	25
4.2 Organization of the IRS Campaign .....	25
4.3 Results.....	26
4.3.1 Number of Eligible Structures Found and Spray Coverage.....	26
4.3.2 Use of Insecticide and Performance of Spray Operators .....	27
4.4 Data Quality Assurance .....	28
<b>5. Post-Spray Activities.....</b>	<b>29</b>
5.1 IRS Materials and Equipment.....	29
5.2 Post-Season Insecticide Inventory .....	29
<b>6. Environmental Compliance .....</b>	<b>30</b>
6.1 Environmental Compliance .....	30
6.2 Challenges and Considerations .....	30
6.3 Pre-Season Environmental Compliance Assessments.....	32

6.4 Environmental Compliance Activities during the Campaign .....	32
6.4.1 New Design of Fixed Soak Pit.....	32
6.4.2 Mobile Soak Pits.....	33
6.5 Tyvek Suit.....	33
6.6 Post-Season Environmental Compliance Activities .....	34
6.6.1 IRS Campaign Waste Disposal .....	34
<b>7. Monitoring and Evaluation .....</b>	<b>36</b>
7.1 M&E Objectives and Methodology .....	36
7.2 Data Management and Processing .....	36
7.2.1 Data Collection.....	36
7.2.2 Data Entry.....	36
7.2.3 Storage of Data .....	36
<b>8. Entomology .....</b>	<b>37</b>
8.1 Cone Bioassay Test Results .....	37
8.2 Fumigant Test .....	40
<b>9. Gender.....</b>	<b>41</b>
<b>10. National capacity building.....</b>	<b>43</b>
<b>11. Challenges and Lessons Learned.....</b>	<b>44</b>
<b>Annex A: Items Procured Internationally .....</b>	<b>46</b>
<b>Annex B: Site Repairs .....</b>	<b>47</b>
<b>Annex C: Number of People Trained .....</b>	<b>51</b>
<b>Annex D: Gender Awareness and Sexual Harassment Guidelines .....</b>	<b>54</b>
<b>Annex E: PMI VectorLink Madagascar Monitoring and Evaluation Plan Indicator Matrix..</b>	<b>55</b>
<b>Annex F: IEC Messages.....</b>	<b>67</b>
<b>Annex G: List of Fokontany with Protected Area in Tuléar li .....</b>	<b>69</b>
<b>Annex H: Environmental Mitigation and Monitoring Report .....</b>	<b>71</b>
<b>Annex I: Reasons for Refusals .....</b>	<b>76</b>
<b>Annex J: Wall bio assay sites and insecticide used.....</b>	<b>77</b>

## List of Tables

Table 1: Summary of the 2018 IRS campaign results .....	x
Table 2: List of PMI Supported IRS from 2011 .....	11
Table 3: List of intervention districts and selected insecticide .....	13
Table 4: Regions and districts targeted, and communes sprayed, IRS campaign, Madagascar, July-October, 2018.....	14
Table 5: Number of IRS seasonal workers hired by zone and gender .....	17
Table 6: Number of people trained, disaggregated by spray zone and gender.....	19
Table 7: IEC Door to door mobilization.....	22
Table 8: Promotional items distributed during IRS campaigns by zone, district and event in 2018.....	23

Table 9: Number of spray teams per district.....	26
Table 10: Insecticide used per district and SOP performance.....	27
Table 11: Number of supervisory tools used .....	28
Table 12: Post Spray Insecticide Inventory.....	29
Table 13: List of communes that required river navigation.....	31
Table 14: Waste disposal plan .....	35
Table 15: Comparison of proportions of women in supervisory role between IRS campaigns from 2014 to 2018 by gender .....	41
Table 16: Comparison of proportions of women in spray team between IRS campaigns from 2014 to 2018 by gender (percentage of women).....	41
Table 17: Environmental mitigation and monitoring report Madagascar 2018.....	71

## Table of Figures

Figure 1: Location of spray areas covered during the 2018 IRS campaign.....	12
Figure 2: Launch of the 2018 Madagascar IRS campaign, Mananjary District, August 6, 2018.....	24
Figure 3: Social Mobilization for IRS acceptance in Belalanda, Tulear II, September 28, 2019 .....	24
Figure 4: New Soak Pit Design .....	33
Figure 5: Mobile Soak Pit .....	33
Figure 6: SOPs in Tyvek Suits .....	34
Figure 7: Residual effectiveness observed for pirimiphos-methyl 300 CS (organophosphates) in the East Coast .....	38
Figure 8: Residual effectiveness observed for Pirimiphos-Methyl 300 CS (Organophosphates) in Mahatsimjo and Ampasimpotsy and for Clotianidin 50 WG (neonicotinoid) in Lanivo/Anosy and Manambotra Sud, South east.....	39
Figure 9: Residual effectiveness observed for Pirimiphos-methyl 300 CS (organophosphates) in the South West:.....	39
Figure 10: Results of Fumigant Tests .....	40

# ACRONYMS

---

<b>BCC</b>	Behavior Change Communication
<b>BHC</b>	Basic Health Center
<b>CDC</b>	Centers for Disease Control and Prevention
<b>CHW</b>	Community Health Workers
<b>CFV</b>	Control Flow Valve
<b>DCV</b>	Data Collection Verification
<b>DEC</b>	Data Entry Clerk
<b>DLP</b>	Malaria Control Directorate ( <i>Direction de Lutte contre le Paludisme</i> )
<b>ECO</b>	Environmental Compliance Officer
<b>HLC</b>	Human Landing Catch
<b>IEC</b>	Information, Education and Communication
<b>IRS</b>	Indoor Residual Spraying
<b>LLIN</b>	Long Lasting Insecticide-treated Net
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MoE</b>	Ministry of Environment
<b>MEP</b>	Monitoring and Evaluation Plan
<b>MSP</b>	Mobile Soak Pit
<b>NMCP</b>	National Malaria Control Program
<b>PCV</b>	Peace Corps Volunteers
<b>PMI</b>	U.S. President's Malaria Initiative
<b>PPE</b>	Personal Protective Equipment
<b>PSC</b>	Pyrethrum Spray Catch
<b>SBCC</b>	Social Behavior Change Communication
<b>SEA</b>	Supplemental Environmental Assessment
<b>SM/TL</b>	Sector Manager/Team Leader
<b>SOP</b>	Spray Operator
<b>TO</b>	Task Order
<b>TOT</b>	Training of Trainers
<b>USAID</b>	United States Agency for International Development
<b>USG</b>	United States Government
<b>WHO</b>	World Health Organization

# EXECUTIVE SUMMARY

---

One key objective of the PMI VectorLink Project is to limit exposure to malaria vectors and reduce the incidence and prevalence of malaria through indoor residual spraying (IRS). To achieve this objective, PMI VectorLink Madagascar conducted IRS campaigns in the South East, the East Coast, and the South West regions of Madagascar with two insecticides: organophosphates (Actellic® 300 CS) and Clothianidin (SumiShield® 50 WG), a newly introduced insecticide to the VectorLink Madagascar program in 2018. The first campaign began in the South East, where 249,541 structures were sprayed in four districts (Farafangana, Vohipeno, Manakara and Mananjary) from July 23 to August 20, 2018. The IRS campaign was completed in three districts in the East Coast (Brickaville, Fénérive Est, and Tamatave II) from September 3 to September 29, 2018, where 204,744 structures were sprayed. In the South West, 94,504 structures were sprayed in two districts (Sakaraha and Tulear II) from September 17, 2018 to October 17, 2018. In total, PMI Vectorlink Madagascar found 586,768 eligible structures and sprayed 548,789 structures. This effort resulted in an overall coverage rate of 93.5 percent for all nine districts while protecting 2,232,097 people from the burden of malaria in 2018.

The followings are key highlights of PMI Vectorlink Madagascar's spray campaigns in 2018:

- A total of 204,744 structures were sprayed in the East Coast (54,653 in Brickaville, 84,029 in Fenerive Est, and 66,062 in Tamatave II), 249,541 structures were sprayed in the South East (84,169 in Farafangana, 68,260 in Manakara, and 49,314 in Mananjary, and 47,798 in Vohipeno) and 94,504 were sprayed in the South West (28,614 in Sakaraha and 65,890 in Tulear II). The spray coverage was 93.2 percent in the East Coast; 94.6 percent in the South East and 91.5 percent in the South West. Of the 586,768 structures found by spray operators (SOPs), a total of 548,789 structures were sprayed, resulting in an overall spray coverage rate of 93.5 percent for all 9 districts in 2018.
- A total of 7,085 people were trained (2,032 people in the East Coast, 3,144 in the South East, and 1,909 in the South West), 2,367 (33.4%) of whom were women, to implement the 2018 IRS campaign.
- A total of 69,250 bottles of Actellic® 300 CS were used in Manakara, Mananjary, Tulear II, Sakaraha, Tamatave II, Brickaville and Fenerive Est and 18,807 sachets of SumiShield® 50WG were used in Farafangana and in Vohipeno. With Utilization ratios of 5.3 structures per Actellic bottle in the East Coast, 7.3 structures per Sumishield sachet in the South East, and 6.4 structures per bottle of Actellic® 300 CS in the South West.
- During the first week of each of the IRS campaigns in the East Coast, South East, and South West, cone bioassays were conducted to assess the quality of the spray. The results indicated 100 percent mortality for all of the structures sampled in all three campaigns.
- PMI VectorLink Madagascar utilized mobile soak pits (MSPs) in remote areas to reduce the travel time of SOPs and safely dispose of IRS liquid waste from the field. Tyvek suits to replace cotton coveralls as personal protective equipment (PPE) were used in nine communes in the South East and seven communes in the South West
- The PMI VectorLink Madagascar team implemented two mobile technologies: a mobile performance management tracking (PMT) tool to monitor daily operational results, and an e-Inventory system to monitor the current stock of insecticide and spray equipment at all operational sites. PMI VectorLink Madagascar also used Webex as a communication tool for daily debriefing on IRS progress.

- The PMI VectorLink Madagascar team strengthened Information, Education, Communication (IEC) messaging during the campaign in collaboration with Peace Corps Volunteers (PCVs) in Brickaville district.
- The PMI VectorLink Madagascar team organized advocacy meetings in all nine districts with traditional leaders and local authorities prior to the spray campaign to minimize refusal rates.

Table I below shows the main results obtained during the IRS 2018 campaign.

**Table I: Summary of the 2018 IRS campaign results**

Result	South East		South West	East Coast	Total
Number of districts covered by PMI-supported IRS	2	2	2	3	9
Insecticide class	Neonicotinoid	Organophosphates	Organophosphates	Organophosphates	
Number of structures targeted by IRS, with the support of PMI	134,290	113,585	95,279	212,589	555,743
Number of structures found by IRS, with the support of PMI	124,776	138,971	103,286	219,735	586,768
Spray coverage (sprayed/found)	97.40%	92.00%	91.50%	93.20%	93.50%
Number of structures treated with PMI-supported IRS	131,967	117,574	94,504	204,744	548,789
Population protected by the PMI-supported IRS	585,409	517,536	398,423	730,729	2,232,097
Pregnant women protected by the PMI-supported IRS	24,824	21,637	13,094	26,266	85,821
Children under five protected by the PMI-supported IRS	91,973	82,477	68,718	84,924	328,092
Number of people receiving training funded by US Government (USG) to conduct IRS	3,416		1,989	2,169	7574

# I. INTRODUCTION

## I.1 BACKGROUND OF IRS IN MADAGASCAR

PMI has been supporting IRS in Madagascar since 2008, in line with the National Malaria Control Strategy (2008-2012 and 2013-2017). IRS was initially implemented in 55 districts within the Central Highlands (CHL). Up until 2011, all IRS in Madagascar was categorized as blanket spraying, providing IRS to as close to 100 percent of the eligible structures in targeted districts as possible. This IRS strategy has been successful through collaboration between PMI and the Global Fund, with both donors providing strong support towards IRS spray programs throughout Madagascar. Table 2 below shows the list of all PMI supported IRS from 2011.

**Table 2: List of PMI Supported IRS from 2011**

Year	Geographic Area	IRS Strategy	Insecticide	Number of Structures	Population Protected
2011	CHL & Fringe (8 districts)	Blanket	Pyrethroid & Carbamate	222,026	1,324,525
2012	CHL & Fringe (40 communes)	Focal	Pyrethroid & Carbamate	87,081	522,292
2013	CHL and Fringe (~40 communes)	Focal	Pyrethroid and Carbamate	125,125	749,965
2014	East Coast (3 districts)	Blanket	Organophosphate	149,408	557,419
2015	East Coast (3 districts) and South East (1 district)	Blanket	Organophosphate	247,902	1,016,841
2016	East Coast (3 districts) and South East (2 districts)	Blanket	Organophosphate	310,426	1,257,036
2017	East Coast (3 districts) and South East (5 districts)	Blanket	Organophosphate	487,636	2,008,963
2018	East Coast (3 districts) South East (4 districts) South West (2 districts)	Blanket	Organophosphate Neonicotinoid (SumiShield)	548,775	2,232,097

In 2018, in accordance with the new 2018-2022 national strategic plan, PMI VectorLink Madagascar conducted spray operations in the South East (Farafangana, Manakara, Mananjary and Vohipeno) from

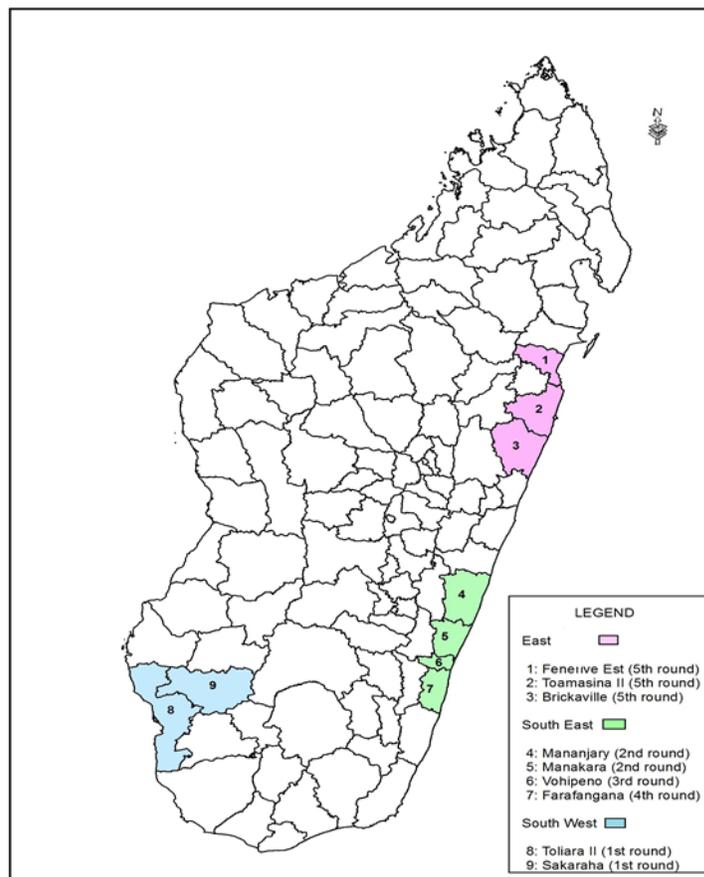
July, 23 to August 20, 2018 in the East Coast (Brickaville, Fenerive Est and Tamatave II) from September 3 to September 29 and from September 17 to October 17 in the South West (Tular II and Sakaraha).

## 1.2 2018 CAMPAIGN OBJECTIVES

PMI VectorLink Madagascar's main objectives for the 2018 IRS campaign were as follows:

1. Strengthen the capacity of seasonal spray campaign supervisors and government officials in monitoring and supervision of IRS activities
2. Strengthen NMCP/Malaria Control Directorate/Direction de Lutte Contre le Paludisme (DLP) capacity in entomological monitoring
3. Strengthen NMCP/Malaria Control Directorate/Direction de Lutte Contre le Paludisme (DLP) capacity in environmental compliance monitoring
4. Ensure high quality spraying is carried out on time, before the peak of transmission season
5. Conduct IRS-related entomological monitoring and surveillance in eight sentinel sites for all the key PMI indicators: three in the East, four in the South East, one in the South West. PMI's primary and secondary entomological indicators, excluding cone bioassay, were also collected in four control sites: one in the East, two in the South East, and one in the South West. In one site, Miary Lamatihy in Sakaraha, only cone bioassay for IRS quality assessment and insecticide decay rate was conducted. Figure 1 below shows the areas that were sprayed during the 2018 campaign.

**Figure 1: Location of spray areas covered during the 2018 IRS campaign**



## 2. PRE-SPRAY ACTIVITIES

### 2.1 IRS CAMPAIGN PLANNING

Below are the activities that the team undertook to plan and organize the 2018 IRS campaign.

#### 2.1.1 DISTRICT AND INSECTICIDE SELECTION

In addition to selecting the insecticide used in each district, NMCP, PMI and PMI VectorLink Madagascar worked together to select the communes and districts sprayed in 2018. After reviewing entomological surveillance data following the 2015-2017 IRS campaign, organophosphates (Actellic® 300 CS) and Neonicotinoid (SumiShield 50 WG) were selected and used as the insecticide classes for the 2018 IRS campaign in the South East (Actellic® 300 CS and SumiShield 50 WG), East Coast (Actellic® 300 CS) and South West (Actellic® 300 CS).

**Table 3: List of intervention districts and selected insecticide**

Region	District	Insecticide Class Used
South East	Manakara	Organophosphate
	Mananjary	
South West	Tulear II	
	Sakaraha	
East	Tamatave II	
	Brickaville	
	Fenerive Est	
South East	Vohipeno Farafangana	

#### 2.1.2 GEOGRAPHICAL RECONNAISSANCE IN TULEAR AND SAKARAHA

PMI VectorLink Madagascar conducted geographical reconnaissance (GR) in the two new districts in 2018 in the South West (Tulear and Sakaraha). The purpose of the GR was to collect information for better quantification and spray planning, to estimate the number of structures to be targeted, and to have a better understanding of cultural realities and security issues in these districts.

The results provided PMI VectorLink Madagascar with an idea of the zone's accessibility, size and the type of structures. This activity helped to establish the final list of intervention communes, since some were excluded due to environmental sensitivities (organic products), and adaptations of the spray strategy were needed in Sakaraha, to the security situation.

For proper planning of the campaign, PMI VectorLink Madagascar conducted a survey of eligible structures to spray in these newly selected districts in the South West. This activity helped gather information on the types of materials used to construct the structures and the accessibility of each locality.

**Table 4: Regions and districts targeted, and communes sprayed, IRS campaign, Madagascar, July-October, 2018**

Region	District	Number of communes sprayed/total communes in the district	Percentages (%)
Atsinanana (East Coast)	Brickaville	10/18	(56%)
Analanjirofo (East Coast)	Fenerive Est	14/14	100%
Atsinanana (East Coast)	Tamatave II	12/19	63%
<b>TOTAL EAST COAST</b>		<b>36/51</b>	<b>70%</b>
South East (Atsimo Atsinanana region)	Farafangana	33/33	100%
South East (Vatovavy Fito Vinany region)	Vohipeno	21/21	100%
South East (Vatovavy Fito Vinany region)	Manakara	39/47	83%
South East (Vatovavy Fito Vinany region)	Mananjary	18/31	58%
<b>TOTAL SOUTH EAST COAST</b>		<b>111/132</b>	<b>84%</b>
South West (Atsimo Andrefana region)	Sakaraha	11/12	92%
South West (Atsimo Andrefana region)	Tulear II	26/26	100%
<b>Total SOUTH WEST</b>		<b>37/38</b>	<b>97%</b>
<b>Grand Total</b>		<b>184/221</b>	<b>83%</b>

### 2.1.3 MICRO-PLANNING

PMI VectorLink Madagascar held several internal meetings to plan and organize the 2018 IRS campaign in the South East, East Coast, and South West. Renewed and increased collaboration with the Government of Madagascar led to a larger involvement of officials from the NMCP/DLP and decentralized services of the Ministry of Public Health. Members were heavily involved throughout the planning and implementation process by providing training and conducting supervision of operations. PMI VectorLink Madagascar successfully organized the following trainings:

Master training in Fianarantsoa to train trainers to decentralize training of trainers in each operational district for the purpose of sharing IRS best practices on both theoretical and practical levels. This master training was attended by the PMI team, participants from NMCP with representatives from the national level including PMI VectorLink Madagascar staff and IRS project selected district seasonal staff. There were 40 participants at the Master training, including 8 participants from the NMCP/DLP and 32 VectorLink staff (seasonal and full-time time staff).

## 2.2 LOGISTICS NEEDS AND PROCUREMENT

Prior to the spray campaign, PMI VectorLink Madagascar conducted a logistics assessment in the East Coast, South East and South West based on targeted structures to be sprayed, previous years' experiences and results from the geographical reconnaissance. The logistics assessment helped to review the following:

- Available stock of materials, consumables and equipment
- Transportation arrangements, including vehicle hiring for spray operations and supervision
- Estimation of insecticides, personal protective equipment (PPE) and spray equipment required to meet the needs of spraying
- Mobilization and distribution of equipment, materials and supplies

PMI VectorLink Madagascar used the assessment results for international and local procurements. Most of the PPE and spray pumps used during the previous campaign remained in acceptable and usable conditions, and were used in all the nine districts. PMI VectorLink Madagascar recorded the quantities of damaged or non-reusable PPE and developed a list of PPE needed for the spray campaign.

Overall, PMI VectorLink Madagascar made local and international procurements using an open tender process, collecting bids/quotes on commodities purchased. The team also established the number and type of vehicles required for each district's IRS operations based on the intervention approach and accessibility of the areas. PMI VectorLink Madagascar conducted a competitive bidding process to lease rental vehicles for IRS operations and selected local companies to supply the transportation.

### 2.2.1 INTERNATIONAL PROCUREMENT

Please refer to Annex A for details on PPE items purchased, used, and remaining in stock after the IRS campaign. In 2018, PMI VectorLink Madagascar was among the PMI VectorLink countries that benefited from the Next Generation IRS (NgenIRS) support in the procurement of insecticide. Through that support, PMI VectorLink Madagascar procured Actellic® 300 CS and Sumishield insecticide at a co-payment price of \$15 per unit of insecticide instead of the market price of \$23.50 per unit. The PMI VectorLink project procured 9,312 bottles of Actellic® 300 CS and 18,827 sachets of SumiShield® 50WG and received stock of 50,000 bottles of Actellic® 300 CS from the NMCP to cover the campaign needs based on available information during the time period in which orders needed to be placed. The project used 69,417 bottles of Actellic® 300 CS and 18,807 sachets of SumShield.

#### WAREHOUSES

Considering the long distances between the three zones (South East, South West and East), the project used one central warehouse in each of the three zones. The team used the central warehouses to receive and store all materials and equipment needed for the spray campaign in the South East, the East Coast and the South West. The packing of all materials was done at each central warehouse and sent out to nine district warehouses.

## 2.3 HUMAN RESOURCE REQUIREMENTS

### 2.3.1 RECRUITMENT OF STAFF

#### HIRING OF SEASONAL STAFF

In collaboration with local government authorities (Medecin Inspecteur/Inspecting Doctor, District Lead, Mayor and Basic Health Center Chief), PMI VectorLink Madagascar hired 7,623 seasonal workers (3,430 seasonal workers in the South East, including 2,495 men and 935 women, 2,232 seasonal workers in the

East Coast, including 1,420 men and 812 women, and 1,961 seasonal workers in the South West, including 1,330 men and 631 women).

The year 2018 is marked by the use of the new database software to capture and have a real-time list of seasonal workers. The software is called Seasonal Staff Database or “S2D”. The software is a web based application, technical and functional developed internally by the Human Resources, Monitoring and Evaluation, and Information Technology (IT) Managers to record individual information about each seasonal employee. The output list was sent timely to the insurance company to insure seasonal workers before the beginning of the IRS campaign. The SIM card number on the list was used by the finance team for mobile banking payment. The S2D is also used to generate codes and numbers required for Spray Operators (SOP) and Mobilizers (MOB).

Table 3 shows the distribution of seasonal workers hired for each position, broken down by gender and spray zone.

**Table 5: Number of IRS seasonal workers hired by zone and gender**

	South East		East Coast		South West		Total
	Male	Female	Male	Female	Male	Female	
Enumerators/ Supervisors	0	0	0	0	456	262	<b>718</b>
Central Operations Assistant	3	1	0	0	0	0	<b>4</b>
Central Logistics Assistant	2	0	0	0	0	0	<b>2</b>
Central Information Technology Assistant	1	0	0	0	0	0	<b>1</b>
Central Financial Assistants	1	2	0	0	0	0	<b>3</b>
District Financial Assistants	0	5	0	3	0	2	<b>10</b>
E-Inventory Developer Assistant	1	0	0	0	0	0	<b>1</b>
Environmental Compliance Assistant	2	1	0	0	0	0	<b>3</b>
Central Monitoring and Evaluation Assistant	1	0	0	0	0	0	<b>1</b>
Monitoring and Evaluation Assistant	0	4	1	2	0	2	<b>9</b>
District Coordinator Assistant	4	1	3	0	2	0	<b>10</b>
District IEC Assistant	1	3	0	3	0	2	<b>9</b>
Data Entry Clerks (DECs)	9	26	8	13	7	4	<b>67</b>
Sector Manager	67	37	29	15	25	14	<b>187</b>
District Warehouse Keeper	4	1	1	2	1	1	<b>10</b>
Commune Warehouse Keeper	37	68	13	33	19	17	<b>187</b>
Guardians	214	0	79	3	66	0	<b>362</b>
Team Leaders	108	67	99	46	51	19	<b>390</b>
Spray Operators	722	150	521	201	331	9	<b>1,934</b>
e-Inventory data entry clerk	0	1	0	1	0	1	<b>3</b>
Moto courier	37	0	19	0	10	0	<b>66</b>
Washers	2	113	2	84	1	34	<b>236</b>

	South East		East Coast		South West		Total
	Male	Female	Male	Female	Male	Female	
Mobilizers	1,169	453	504	406	324	260	<b>3,116</b>
Porters	121	0	145	0	44	3	<b>313</b>
<b>Total</b>	<b>2,506</b>	<b>933</b>	<b>1,424</b>	<b>812</b>	<b>1,337</b>	<b>630</b>	<b>7,642</b>
<b>Percentage of women</b>	<b>27.1%</b>		<b>36.3%</b>		<b>32.0%</b>		<b>31.1%</b>
<b>TOTAL</b>	<b>3,439</b>		<b>2,236</b>		<b>1,967</b>		<b>7,642</b>

## 2.3.2 PAYMENT OF SEASONAL WORKERS

### PAYMENT BY MOBILE BANKING

PMI VectorLink Madagascar paid most seasonal workers through a mobile banking system; however, the team faced some challenges in using and managing the mobile banking system through Telma network (Mvola):

- There were three major networks in the field (Telma, Airtel and Orange) and seasonal workers already had their network for mobile banking payment. It was easy for the project to pay those beneficiaries with Mvola. The project faced difficulties paying beneficiaries of other networks with Mvola and ended up paying them by cash due to incompatibility between networks.

## 2.4 TRAINING OF SEASONAL STAFF

PMI VectorLink Madagascar organized and hosted training sessions for the seasonal staff in the South East, the East Coast and the South West. The project designed the training sessions to ensure that all seasonal workers were trained in their roles and had a solid understanding of how to implement all campaign activities. The training sessions also included occupational precautions and emergency measures (i.e. insecticide poisoning management). PMI VectorLink Madagascar staff conducted all training sessions in collaboration with the NMCP and representatives from the Ministry of Health (MOH) at the national, regional, and district levels. The training sessions in the South East took place from July 2 to July 21, 2018. In the East Coast, the training sessions were held from August 13 to September 1, 2018. In the South West, the training sessions were held from August 27 to September 15, 2018. A total of 7,085 people were trained (3,144 in the South East and 2,032 in the East, and 1,909 in the South West). Table 4 below shows the number of training sessions and the number of people trained, disaggregated by spray zone and gender.

**Table 6: Number of people trained, disaggregated by spray zone and gender**

Training	South East								East Coast						South West			
	Manakara		Mananjary		Farafangana		Vohipeno		Tamatave		Fenerive Est		Brickaville		Tulear		Sakaraha	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Training of SOPs	269	43	173	55	244	78	141	36	199	65	247	122	175	58	270	24	118	2
Training of Trainers	18	12	11	8	24	10	14	7	10	4	11	7	8	4	17	10	7	5
Training of DECAs and M&E Assistants	4	7	1	7	3	11	1	5	1	6	5	5	3	4	4	4	3	2
Training of Warehouse Keepers for all districts, including 2 Logistics Assistants	12	22	5	13	14	19	6	14	2	10	8	9	2	10	15	11	3	4
Training of IEC Mobilizers	422	151	179	66	388	184	180	52	137	136	245	179	122	91	216	204	107	56
Training of Washers	2	27	0	24	0	39	0	24	0	29	0	35	0	22	0	25	0	10
Training of Transporters	16	0	8	0	11	0	8	0	13	0	9	0	7	0	16	0	12	0
Training of Security Officers	57	0	40	0	70	0	44	0	28	0	29	0	24	0	55	0	8	0
Training of Health Workers for poisoning case management	22	25	17	8	13	28	9	10	7	27	8	21	13	9	18	25	12	5
Training of Financial Assistants	0	2	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
Enumeration training	0	0	0	0	0	0	0	0	0	0	0	0	0	0	315	168	141	95
<b>Total M/F</b>	<b>822</b>	<b>289</b>	<b>434</b>	<b>182</b>	<b>767</b>	<b>370</b>	<b>403</b>	<b>149</b>	<b>397</b>	<b>278</b>	<b>562</b>	<b>379</b>	<b>354</b>	<b>199</b>	<b>926</b>	<b>472</b>	<b>411</b>	<b>180</b>
<b>Percentage of women</b>	<b>32.98%</b>																	
<b>Sub Total</b>	<b>7,574</b>																	

**NB:** In addition to the seasonal workers recruited, public health workers also participated in various trainings. This accounts for the difference between the total number of seasonal staff recruited and the total number of people trained.

The trainings covered the following key topics:

- Introduction to malaria control
- IRS planning and logistics management
- Spray techniques and processes
- Environmental compliance and personal safety
- Advocacy and social mobilization
- IRS monitoring and evaluation
- Supervision of IRS activities
- Gender awareness
- Insecticide poisoning management

# 3. IEC MOBILIZATION

---

## 3.1 MOBILIZATION METHODOLOGY

PMI VectorLink Madagascar organized awareness-raising events before, during, and after the IRS campaigns. The project team worked with media channels to produce and distribute various IRS promotional materials and directly contacting household beneficiaries through door-to-door mobilization to inform them of the IRS campaign schedule and its benefits for malaria control. PMI VectorLink Madagascar worked closely with the NMCP to conduct IEC activities during mobilization activities. The project adopted the following working methodology to conduct mobilization:

- Reviewed key policy documents (National Malaria Control Strategic Plan, PMI Strategy Papers on IRS messages, etc.).
- Discussed and planned IEC/ social behavior change communication (SBCC) mobilization activities in collaboration with the NMCP's IEC/SBCC team.
- Conducted meetings with traditional, health and administrative authorities.
- Conducted advocacy meetings in each district with local and traditional authorities in the regions, districts, communes, and fokontany leaders
- Worked with Peace Corps Volunteers (PCVs) based on their availability. The team was able to collaborate with six PCVs in Brickaville for sensitization activities.
- Trained seasonal staff involved in the implementation of IEC/ SBCC activities (mobilizers and their supervisors).
- Disseminated IEC materials in the intervention communes and *fokontany*.
- Conducted door-to-door mobilization.
- Aired radio messages on all radio stations with a wide geographical coverage.
- Organized radio broadcasts with the participation of IEC officials from the public health system to strengthen advocacy at all levels.
- Provided supervisory training and ensured supervision of field mobilization teams.
- Recruited the chief of fokontany, as IEC mobilizer responsible for community mobilization in their village, working closely with community health workers.

## 3.2 ADVOCACY

To ensure the involvement of local leaders in the spray campaign, PMI VectorLink Madagascar led several advocacy activities. This helped the project to minimize refusals from beneficiaries. The activities included:

- Organizing an advocacy workshop in each district with the participation of all authorities in the project intervention regions and districts (traditional leader, administrative and districts authorities) in the South East, the South West and East Coast. Those authorities conducted local meetings and door to door mobilization based on their advocacy action plan to increase IRS acceptance. In Brickaville, Peace Corps Volunteers were involved in the advocacy workshops.

- Organizing advocacy actions in the communes and *fokontany* before and during IRS campaigns in the following forms: courtesy visits, meetings with local authorities, information sessions at different levels (communes and *fokontany*) with the involvement of all social actors; and participation in various official meetings in the districts, communes, and *fokontany* to strengthen advocacy and IRS messages and to share information about the spraying program in localities. As local leaders, chiefs of *fokontany* assisted in carrying out IEC mobilization in their villages and working closely with community health workers (CHWs). Their positions helped ensure easy community mobilization and increase IRS acceptance.

### 3.3 DOOR-TO-DOOR MOBILIZATION

PMI VectorLink Madagascar implemented door-to-door mobilization from July 9 to July 14, 2018 in the South East, from August 20 to August 25, 2018 in the East Coast, and from September 3 to September 8 in the South West. Building on lessons learned from the last campaign, IEC Mobilizers worked for 12 days: six days before, three days during, and three days after the campaign, according to the SOPs plan, with the chief of the *fokontany*, *basic health center (CSB) mobilizer and a project IEC Assistant*, serving as an IEC team member. Mobilizers worked under the supervision of the IEC assistant, the Sector Managers supported by the District Coordinators, the IEC Officer and the Operations Manager. With the IEC strategy in the targeted zones (South East, the South West and East Coast), PMI VectorLink Madagascar was able to conduct more in depth planning for IEC mobilization to ensure that mobilizers reached all households in the *fokontany*. As a result, there was good acceptance of IRS, because of messages delivered by people within the households' communities. For the 2018 IRS campaign, the team worked at the village level with the village chief serving as lead with support from CHWs. After the campaign, CHWs worked to ensure that people did not hang posters or other materials on the wall after the spray. This activity led by the CHWs was conducted one week after the end of the spray in the locality.

Collaboration with Peace Corps Volunteers was an added value for the PMI VectorLink Madagascar Project in Brickaville.

Mobilizers and their supervisors with the support of the IEC Assistant conducted mobilization activities before spraying, during spraying by accompanying SOPs in the villages on the spray day, and after spraying in reinforcing messages for not putting posters on the walls. The team used banners to reinforce IEC messages. The team used the following five categories of messages during mobilization activities:

- Advocacy messages targeting local authorities and leaders to gain their support in advocating for IRS within their communities
- Messages for communities about the advantage and the effect of IRS
- Messages for families on preparing homes
- Messages for SOPs on approaches they should adopt and precautions they should take during and after spraying
- Messages for beneficiaries to not post or paint treated walls for six months after spraying

In close coordination with NMCP national and regional staff, the team conducted an IEC mobilization activity to address non-acceptance of IRS. Table 5 below summarizes the IEC mobilization results for the East Coast, the South East and the South West.

**Table 7: IEC Door to door mobilization**

Area	Structures			Population Reached			IRS		Materials distributed
	Found	Sensitized	Not Sensitized	Total	Males	Females	Accepted	Not Accepted	
Farafangana	82,801	80,181	2,620	248,152	112,928	135,224	79,366	2,492	80,137
Manakara	65,492	62,663	2,829	180,003	81,784	98,219	56,336	7,303	62,845
Mananjary	39,716	38,841	875	116,475	54,109	62,366	36,946	2,476	38,857
Vohipeno	30,904	29,895	1,009	91,909	42,785	49,124	28,918	1,640	30,450
<b>Total South East</b>	<b>218,913</b>	<b>211,580</b>	<b>7,333</b>	<b>636,539</b>	<b>291,606</b>	<b>344,933</b>	<b>201,566</b>	<b>13,911</b>	<b>212,289</b>
Brickaville	31,273	30,077	1,196	76,054	35,371	40,683	28,650	1,530	29,316
Fenerive Est	47,279	45,269	2,010	120,451	56,163	64,288	42,989	2,418	43,264
Toamasina II	40,469	36,672	3,797	100,493	47,876	52,617	34,673	3,939	36,028
<b>Total East</b>	<b>119,021</b>	<b>112,018</b>	<b>7,003</b>	<b>296,998</b>	<b>139,410</b>	<b>157,588</b>	<b>106,312</b>	<b>7,887</b>	<b>108,608</b>
Sakaraha	26,923	26,114	809	75,960	35,187	40,773	25,480	837	25,715
Toliara II	69,994	66,476	3,518	187,849	82,438	105,411	64,551	3,058	66,320
<b>Total South West</b>	<b>96,917</b>	<b>92,590</b>	<b>4,327</b>	<b>263,809</b>	<b>117,625</b>	<b>146,184</b>	<b>90,031</b>	<b>3,895</b>	<b>92,035</b>
<b>TOTAL</b>	<b>434,851</b>	<b>416,188</b>	<b>18,663</b>	<b>1,197,346</b>	<b>548,641</b>	<b>648,705</b>	<b>397,909</b>	<b>25,693</b>	<b>412,932</b>

### 3.4 OTHER IEC ACTIVITIES

The team conducted other IEC activities in addition to the door-to-door mobilization. These activities included mass communication, and the distribution of three types of updated materials that were used during the 2018 campaign (e.g., flyers, banners and informative posters). Prior to the spray campaign, the team reviewed all materials jointly with the NMCP communication staff to match the Malagasy government's requirements and strategy. Table 6 below summarizes the IEC materials distributed. The project also aired radio messages in local languages in collaboration with local radio stations targeting broad geographic coverage in the project's intervention regions and districts to strengthen IRS messages and disseminate the spray schedules. PMI VectorLink Madagascar developed and aired specific pre-spray and spray period messages. The team aired two types of radio spots: a radio spot announcing the arrival of IRS in the district and a radio spot to educate people to not hang posters on the wall after spraying. There were 870 broadcasts for the first type and 819 for the second type, for a total of 1,689 radio spots.

PMI VectorLink Madagascar organized a Social Mobilization of IRS in Belanda, Tulear II on September 28, 2018 to sensitize the population to accept IRS, and kick off IRS activities in the South West. This event benefited from the participation of the Director of the Cabinet of the Ministry of health, NMCP representatives, parliamentarians, senators, local and traditional authorities, community members, women's groups, youths, the United States Agency for International Development (USAID /PMI Madagascar team, and the PMI VectorLink team. This event helped improve IRS acceptance in the area. Table 6 below shows the list of IEC items distributed during the 2018 spray campaign.

**Table 8: Promotional items distributed during IRS campaigns by zone, district and event in 2018**

Area	District	Flyers	Posters	Tee-shirts	Caps	Banners
East	Brickaville	29,316	1,360	420	420	11
	Fenerive Est	43,264	2110	632	632	15
	Toamasina II	36,028	1330	451	451	13
	<b>TOTAL EAST</b>	<b>108,608</b>	<b>4,800</b>	<b>1,503</b>	<b>1,503</b>	<b>39</b>
South East	Farafangana	80,137	3,300	859	859	34
	Manakara	62,845	3,100	458	458	47
	Mananjary	38,857	1,430	814	814	20
	Vohipeno	30,450	1,360	755	755	22
	Launching ceremony			500	500	
	<b>TOTAL SOUTH EAST</b>	<b>212,289</b>	<b>9,190</b>	<b>3,386</b>	<b>3,386</b>	<b>123</b>
South West	Tulear	25,715	3,010	616	616	27
	Sakaraha	66,320	1,000	345	345	13
	Social Mobilization ceremony			611	611	
	<b>TOTAL SOUTH WEST</b>	<b>92,035</b>	<b>4,010</b>	<b>1,572</b>	<b>1,572</b>	<b>40</b>
	<b>TOTAL</b>	<b>412,932</b>	<b>18,000</b>	<b>6,461</b>	<b>6,461</b>	<b>202</b>

**Figure 2: Launch of the 2018 Madagascar IRS campaign, Mananjary District, August 6, 2018**



Arrival of the Minister of Health



Authorities wearing spray gear



Speech by authorities

**Figure 3: Social Mobilization for IRS acceptance in Belanda, Tulear II, September 28, 2019**



# 4. IRS IMPLEMENTATION

---

## 4.1 IRS CAMPAIGN SCHEDULE

Once the team completed the SOP training sessions, IRS implementation began immediately. PMI VectorLink Madagascar implemented the spray campaign in the South East, Manakara, Mananjary, Farafangana and Vohipeno districts from July 23 to August 20, 2018. In the East Coast, the team sprayed the districts of Tamatave II, Brickaville and Fenerive Est from September 3 to September 29, 2018; and the districts of Tulear II and Sakaraha from September 17 to October 17, 2018.

The 2018 IRS launching ceremony led by the Minister of Health and the USAID Madagascar Health, Population and Nutrition (HPN) Office Director, took place in Ambohimiarina II in Mananjary District on August 6, 2018. This event also benefited from the participation of parliamentarians, senators, local and traditional authorities, community members, women groups, youths the PMI VectorLink team and the USAID/PMI Madagascar team. A Social mobilization event was also organized in Belanda, Tulear II on September 28, 2018 and was attended by the USAID Madagascar Mission and USAID Washington Representatives, the Cabinet Director of the Ministry of Health, the DLP Director and other local authorities. Many community members, local and traditional authorities attended with a crowd of youths in a lively ambiance and specific IRS and malaria control messages.

## 4.2 ORGANIZATION OF THE IRS CAMPAIGN

The PMI VectorLink Madagascar project adopted “communalization” as the IRS technical approach for the campaign. Seasonal workers were recruited in their communities with the support of local authorities. At the district and commune level, the district coordinator and local authorities jointly conducted seasonal staff recruitment. SOPs continued to work in their communes or in neighboring areas. The team conducted a risk assessment and provided the team with the ability to assess local circumstances. This highly cost effective approach adapted to local settings is called “communalization.” Given the security situation in Sakaraha, the team adopted a different strategy (district based approach), where, all the spray team moved from the district to one commune until completion, and then moved to another commune.

PMI VectorLink Madagascar grouped SOPs in each commune in two to three operational sites depending on the size of the district. Each operational site had a permanent soak pit and a warehouse large enough to serve several spray teams. The team built a total of 374 mobile soak pits (MSPs), 178 for the South East, 148 for the East Coast, and 48 for the South West, for use in remote areas. Additionally, there were 97 permanent soak pits and warehouses (46 in the South East, 30 in the East Coast and 21 in the South West) for the 2018 IRS campaign.

Each morning, every District Coordinator organized breakfast for SOPs and Team Leaders (TLs) before they went to work. Breakfast was an opportunity for the team supervisors and sector manager to communicate recommendations and instructions based on information from the daily debriefing the day before.

Vehicles were available to support operations implementation, including the transportation of insecticide and equipment. The team also used the vehicles to transport SOPs to the spray sites and back to the operational sites at the end of the day, where spray teams conducted the end of the day cleanup. At the end of each day, SOPs handed their completed spray forms to their team leaders, who checked and compiled them before submitting them to their Sector Manager. The team then sent spray forms to data

entry centers for immediate entry into PMI VectorLink Madagascar’s database. Table 7 below shows the number of spray teams and SOPs employed during the 2018 IRS campaign.

**Table 9: Number of spray teams per district**

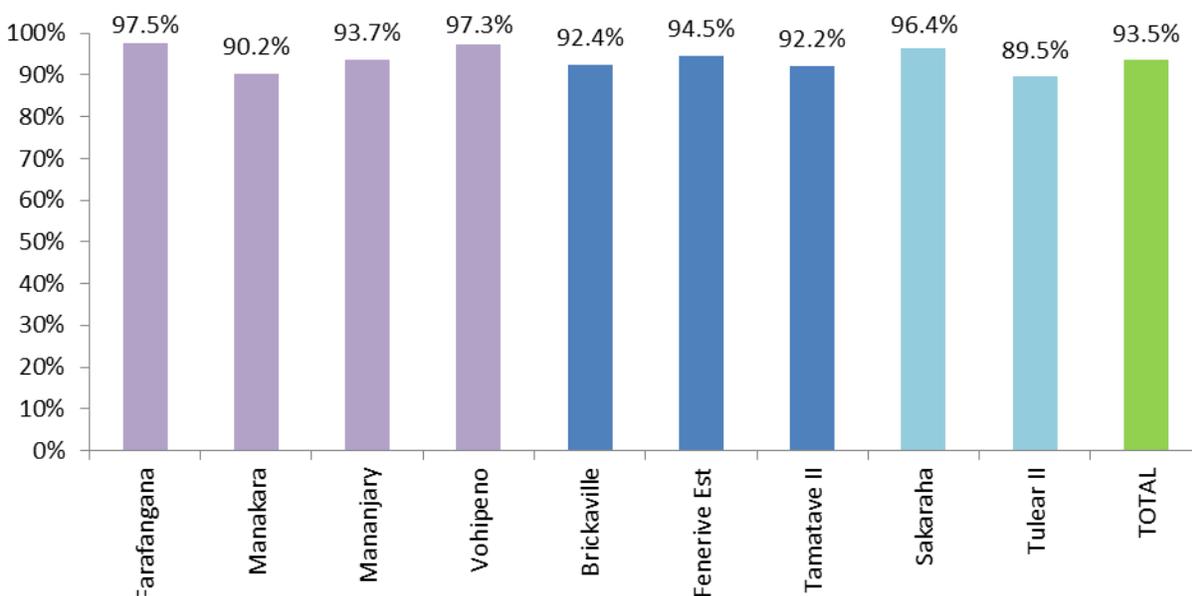
Region	District	Number of spray teams	Number of SOPs
South East	Farafangana	54	268
	Manakara	54	266
	Mananjary	38	190
	Vohipeno	29	148
	<b>Total South East</b>	<b>175</b>	<b>872</b>
East Coast	Brickaville	40	193
	Fenerive Est	62	308
	Tamatave II	43	221
	<b>Total East Coast</b>	<b>145</b>	<b>722</b>
South West	Tulear II	50	240
	Sakaraha	20	100
	<b>Total South West</b>	<b>70</b>	<b>340</b>
<b>TOTAL</b>		<b>390</b>	<b>1,934</b>

## 4.3 RESULTS

### 4.3.1 NUMBER OF ELIGIBLE STRUCTURES FOUND AND SPRAY COVERAGE

SOPs identified a total of 586,768 structures (263,747 in the South East, 219,735 in the East and 103,286 in the South West) and sprayed 548,789 (249,541 in the South East, 204,744 in the East Coast and 94,504 in the South West). In the South East, SOPs sprayed 94.6 percent of all structures identified, 93.2 percent of all structures in the East Coast and 91.5 percent of all structures in the South West. The overall coverage rate achieved was 93.5 percent as indicated in figure 3.

**Figure 4: 2018 IRS Spray Coverage**



#### 4.3.2 USE OF INSECTICIDE AND PERFORMANCE OF SPRAY OPERATORS

PMI VectorLink Madagascar used 69,250 bottles of organophosphates (16,337 in the South East, 38,229 in the East and 14,684 in the South West) and 18,807 of SumiShield® in the South East. On average, each SOP sprayed 14.2 structures per day in the South East, 13 structures in the East and 14.5 structures per day in the South West. One bottle/sachet of insecticide sprayed 7.3 structures in the South East, while operators in the East sprayed 5.3 structures per bottle and 6.4 structures in the South West. The difference is due to the smaller average size of structures in the South East. Table 8: shows the average number of structures covered by a bottle of insecticide, by district.

**Table 10: Insecticide used per district and SOP performance**

Area	District	Structures Sprayed	Number of Bottles/ Sachets Used	Insecticide	Average number of structures sprayed per SOP per day
SOUTH EAST	Farafangana	84,169	12,192	SumiShield® 50WG	15.2
			240	Actellic® 300 CS	
	Manakara	68,260	8,631	Actellic® 300 CS	13.8
	Mananjary	49,314	7,466	Actellic® 300 CS	12.2
	Vohipeno	47,798	6,615	SumiShield® 50WG	15.8
EAST	Brickaville	54,653	10,711	Actellic® 300 CS	13.0
	Fenerive Est	84,029	14,467	Actellic® 300 CS	12.3
	Tamatave li	66,062	13,051	Actellic® 300 CS	14.2
SOUTH WEST	Sakaraha	28,614	4,813	Actellic® 300 CS	14.6
	Tulear li	65,890	9,871,	Actellic® 300 CS	14.4
<b>TOTAL IRS 2018</b>		<b>548,789</b>	<b>88,057</b>		<b>14.0</b>

## 4.4 DATA QUALITY ASSURANCE

PMI VectorLink Madagascar implemented data quality assurance activities for data collection and data entry verification, using the project supervision tools and standard database audit control. The project found that these tools formalized self-audits of the IRS campaign data for better data quality and reduced the number of errors encountered in the operators' everyday forms as well as in the M&E database. Table 9 below shows the number of forms used for each data quality assurance tool and the percentage of forms audited.

**Table 11: Number of supervisory tools used**

<b>Supervision tools for M&amp;E</b>	<b>Number of forms used</b>	<b>Percentage checked</b>
Data Collection Verification	2,080	0.4% of structures found
Data Entry Verification	8,656	1.5% of structures found

Starting this year, each sector manager used the electronic version of the Data Collection Verification (DCV) tool to interview households to verify spray coverage data. Staff visited and interviewed residents from 2,080 structures (0.4% of structures found) during the campaign. Areas where the DCV was implemented were chosen based on the spray coverage rate as reported by SMS data.

At the end of every week, the M&E Assistant met with the District Coordinator and Sector Managers to discuss the spray progress and the errors found using the data quality assurance tools. Furthermore, the PMI VectorLink Madagascar M&E Manager and Database Manager provided feedback regarding errors found on SOP cards and gave recommendations to the PMI VectorLink Madagascar operations team to minimize future errors on the SOP cards.

# 5. POST-SPRAY ACTIVITIES

## 5.1 IRS MATERIALS AND EQUIPMENT

After completion of the IRS campaign, SOPs, washers, team leaders, sector managers, couriers, and district coordinators brought back all PPE, used bottles of insecticide and all the other IRS products to their assigned storage rooms. All the items were inspected and recorded on the final stock records. Then, District Coordinators, District Storekeepers, the Logistics Manager and Logistics Assistant worked together to bring back all PPE, solid wastes and other materials from all storage rooms to the district warehouses and then to the central warehouses in Farafangana, Tulear and Toamasina. Trucks, boats, and pick-up trucks were used for that operation and a given supervisor (Storekeeper, Logistics team, District Coordinator) was assigned to monitor the transportation until the items were received and recorded in the central warehouse.

## 5.2 POST-SEASON INSECTICIDE INVENTORY

Prior to the spray campaign, 18,648 bottles of organophosphate were in stock. PMI VectorLink Madagascar procured 9,312 additional bottles of Actellic® 300CS CS and 18,827 sachets of SumiShield® 50 WG and received 49,990 bottles of Actellic® 300 CS from NMCP to cover the spray campaign both in the South East, the East Coast and in the South West. In 2018, PMI VectorLink Madagascar used a total of 69,250 bottles of Actellic® 300CS and 18,807 sachets of SumiShield® 50 WG with a remaining stock of 8,700 bottles of Actellic® 300CS and 20 sachets of SumiShield® 50 WG at the end of the spray campaign. More specifically the team used 6,615 sachets of SumiShield® in Vohipeno and 12,192 sachets in Farafangana. The number of bottles of Actellic® 300 CS used was 8,631 in Manakara, 7,466 in Mananjary, 240 in Farafangana, 13,051 in Tamatave II, 10,711 in Brickaville, 14,467 in Fenerive East, 4,813 in Sakaraha, and 9,871 in Tulear II.

**Table 12: Post Spray Insecticide Inventory**

<b>Class</b>	<b>Initial stock</b>	<b>Received</b>	<b>Initial Quantity</b>	<b>Used</b>	<b>Final stock</b>
Actellic® 300CS	18,648	59,302	77,950	69,250	8,700
SumiShield® 50 WG	18,827	0	18,827	18,807	20

The remaining insecticide stock of 8,700 bottles with an expiration date of May 2020 will be used for the 2019 spray campaign, with 4,312 bottles in Farafangana's central warehouse and 4,388 bottles in Tulear's central warehouse. The 20 sachets of SumiShield® 50 WG will expire in January 2021.

# 6. ENVIRONMENTAL COMPLIANCE

---

## 6.1 ENVIRONMENTAL COMPLIANCE

The PMI VectorLink Madagascar project operated under a supplemental environmental assessment (SEA) approved by USAID in September 2013, which expired in December 2018. The amended SEA extended the validity of the SEA through December 2018 and authorizes the use pyrethroids, organophosphates, and carbamates and neonicotinoids.

## 6.2 CHALLENGES AND CONSIDERATIONS

In 2018, the project added two districts in the South West Region. As this was the first campaign in Tulear II and Sakaraha, PMI VectorLink Madagascar's Environmental Compliance Officer (ECO) conducted an environmental geographical reconnaissance in these areas from October 29 to November 10, 2017 to identify the proper sites of storerooms, the safest method of SOP transport with insecticide, and environmental measures required to safeguard communities during the spray.

The geographical reconnaissance uncovered a lot of protected areas in the district of Tulear II and Sakaraha (Annex G). Three organizations are involved regarding the management of these protected areas: Madagascar National Parc (MNP), World Wide Fund (WWF), and Missouri Botanical Garden (MBG). Structures within 500 meters of the protected area were not sprayed and after completing a risk analysis, PMI Vectorlink Madagascar opted to avoid installing soak pit within one kilometer of a protected area.

The districts' main economic activities include: cash crops, beekeeping and sale of honey in some rural communities in South East, certified organic honey in certain communes, and certified organic coffee in certain communes of Manakara.

These activities required strict compliance with Best Management Practices (BMPs) for sensitive areas. The team took specific measures to avoid all contamination when spraying the following areas:

- Structures within 500 meters of protected areas were not sprayed
- Minimum distance of 200 meters observed between the structure to be sprayed and beehive or Ravintsara (plant used for the extraction of its essence) culture (As PMI VectorLink Madagascar used SumiShield® 50WG, in Farafangana and Vohipeno district, this distance was necessary to avoid any effect of SumiShield® 50WG on bees)
- Minimum distance of 3 km observed between the structure and the organic apiaries and organic coffee (requirement of the ECOCERT specifications: authority in charge of organic certification)
- Some communes have sources of income on the sale of vanilla in Mananjary district (13 communes). Due to the fact that the IRS campaign takes place at the time of vanilla harvesting and households store the vanilla in their houses close to the vanilla plantation, these communes have been removed from the list of communes to be sprayed.
- All harvested crops were removed from structures before spraying
- Close supervision in these areas was conducted during spraying

- Information meetings were held with the Ministry of Agriculture and Livestock and beekeepers to communicate the nature of the spray and the implications on their activities.
- In addition to the measures taken for sensitive areas, the team communicated information and guidelines on spraying methods regarding sensitive areas to District Coordinators and Sector Managers.
- Since five communes in Manakara are only accessible by foot and it would take a minimum of five hours to walk, these communes have been removed from the list of communes to be sprayed.

The eastern region included two organic farming areas, a palm tree plantation in Fanandrana (Tamatave II) and a curcuma (turmeric) plantation in all localities in the communes of Anivorano Est and Razanaka (Brickaville). The project granted these organic farming areas the same consideration as other protected areas. As a result, the project did not spray these areas this year as in previous years.

Like the East Coast, in the South East, there are numerous streams and rivers to cross to reach the communes to be sprayed. Due to the substantial risk of insecticide spillage in the rivers at these crossings, PMI VectorLink Madagascar implemented measures as detailed in the PMI BMP Manual to prevent negative impacts on the environment, including the following:

- Full and empty insecticide bottles were packed in blue and waterproof plastic barrels
- Equipment was covered with waterproof tarp
- The raft or canoe carrying insecticides and IRS equipment did not carry other people or other goods at the same time, except the person who piloted them
- The water crossing was conducted under the supervision of the ECO or another PMI VectorLink Madagascar staff member briefed by ECO.

**Table 13: List of communes that required river navigation**

Farafangana	Evato	Beretra Bevoay	1h	Calm water
Farafangana	Maheriraty	Ambalavato Nord	3h	Calm water
Mananjary	Mahela	Mahela	3h	Calm water
Vohipeno*	Sahalava	Sahalava	45min	Calm water
Toamasina II	Toamasina II	Amboditandroho	3h	Calm water
Toamasina II	Antetezambaro	Tanambao Nosibe	2h	Calm water
Fenerive Est	Vohipeno	Vohipeno	2h + 1 hour walk	River with rapids
Fenerive Est	Antsiatsiaka	Antsiatsiaka	3h	Calm water
Fenerive Est	Ampasimbe Manasatrana	Ambanja	2h	Calm water
Brickaville	Andovoranto	Andovoranto	1h	Calm water
Brickaville	Ambinaninony	Ambinaninony	3h	Calm water

\*Sahalava in Vohipeno is also accessible by road/car or by foot, in addition to river navigation.

## 6.3 PRE-SEASON ENVIRONMENTAL COMPLIANCE ASSESSMENTS

The PMI VectorLink Madagascar team conducted a pre-season environmental assessment in all districts prior to the spray campaigns, using smartphones with PMI standard environmental compliance checklists. The checklist contained questions to ensure that operational sites, with special emphasis on soak pits and warehouses, were properly set up before spraying. They also guided PMI VectorLink Madagascar's staff to ensure that all PPE and insecticides were delivered and safely stored in warehouses and that seasonal staff working in the warehouses or with soak pits had received appropriate training. The team also used smartphones to collect data on the geographical information of each operational site visited in the geographic information system and to take photos of soak pits and warehouses to show what repairs were needed, or if the site was ready. The ECO found that numerous sites needed to be repaired to meet the standards required for IRS. Please see Annex B for the full list of repairs performed. In Farafangana, because of the proximity of the ground water (less than 50 cm below ground), PMI VectorLink Madagascar had to install a soak pit 1 km away from the warehouse.

PMI VectorLink Madagascar translated all documents (i.e. Material Safety Data Sheet, guide to first aid, recommendation in case of spill, warning sign) into Malagasy. Also, before the campaign, all seasonal staff underwent medical checkups.

## 6.4 ENVIRONMENTAL COMPLIANCE ACTIVITIES DURING THE CAMPAIGN

PMI VectorLink Madagascar's staff conducted inspections to ensure that spray operations met environmental compliance standards as specified in the BMPs. These inspections included monitoring the use of PPE, progressive rinsing of spray pumps, vehicles used to transport spray teams and insecticides, storage conditions of PPE, insecticides and warehouses displaying warning signs. The staff also monitored whether IRS waste was managed and stored properly, that stock cards at warehouses were accurate, and that the SOPs were using the proper spray techniques. In addition, the staff checked that beneficiaries had received clear information about the IRS campaign and knew how to prepare their structure for spraying. PMI VectorLink Madagascar continued to check the condition of fixed and mobile soak pits, specifically for their flow and drainage. Overall, PMI VectorLink Madagascar's staff found that spray operations were satisfactory. However, the staff identified a few environmental compliance issues which were immediately addressed, such as burying waste after sweeping the floor two hours after spray; field supervision allowed the team to address this issue on the spot.

PMI VectorLink Madagascar equipped the SOPs with wipes to clean their visors throughout the day as needed. SOPs were satisfied with the wipes as they improved their visibility. Team leaders collect the contaminated wipes at the end of the day and classified them as waste to be treated.

### 6.4.1 NEW DESIGN OF FIXED SOAK PIT

In some of the operational sites (built either outside or within the premises of basic health centers), PMI VectorLink Madagascar used a new concept for the permanent soak pit. The main difference with the last version is that the wash area is now with concrete and the decontamination is easier. In addition, it is functional throughout the year.

**Figure 4: New Soak Pit Design**



### 6.4.2 MOBILE SOAK PITS

PMI VectorLink Madagascar built on previous success and expanded the use of MSPs for the 2018 IRS campaign (see Figure 4). The total number of MSPs was 374 (178 in the South East, 148 in the East Coast and 48 in the South West).

**Figure 5: Mobile Soak Pit**



### 6.5 TYVEK SUIT

In 2018, PMI VectorLink Madagascar used Tyvek suits in the South West (Tulear and Sakaraha) for some SOPs who used MSPs, as they were working in more remote areas without access to full operational sites. The advantages of using Tyvek suits instead of cotton coveralls include the following:

- Lightweight
- Can be used for three to four days by simply cleaning them with wipes.

**Figure 6: SOPs in Tyvek Suits**



## 6.6 POST-SEASON ENVIRONMENTAL COMPLIANCE ACTIVITIES

Post-season environmental inspections took place from August 17 to August 28, 2018 in the South East, from September 29 to October 08, 2018 in the East Coast and from October 16 to October 21, 2018 in the South West. The main objective of the inspections was to ensure that all soak pits and warehouses had been properly decontaminated and closed out. All the warehouses were emptied of materials and equipment used during spraying. After these items and insecticides had been removed, warehouses were decontaminated with water mixed with bleach and soap. The decontamination process was performed before handing the premises back to the owners. All soak pits were covered with a concrete lid to prevent people from accessing materials and from interfering with the insecticide-waste degradation process.

At the end of the campaign, the team returned all MSP materials to the warehouse. Undamaged containers, buckets, and sponges were decontaminated and stored for reuse. Damaged materials were classified as IRS waste (see below). Screens were removed and considered as waste to be treated. The PMI VectorLink Madagascar Environmental Compliance Officer supervised decontamination activities.

### 6.6.1 IRS CAMPAIGN WASTE DISPOSAL

The table below shows the list of waste generated from the IRS campaign.

**Table 14: Waste disposal plan**

<b>WASTE DISPOSAL PLAN</b>				
<b>DESIGNATION</b>	<b># of KG</b>	<b>TYPE</b>	<b>Disposal Method</b>	<b>Estimation date of transfer to disposal site</b>
Empty bottles	10,476.72	HDPE	Recycle	Start in January 2019
Plastic materials	2053.46	Plastic	Recycle	Start in January 2019
Sponge	146.5	Sponge	Recycle	Start in January 2019
<b>Total to recycle</b>	<b>12,676.684</b>			
Empty boxes	331.15	Papier	Incineration	Start in January 2019
Cotton materials	755.5	Coton	Incineration	Start in January 2019
Empty sachet	37.58	Papier	Incineration	Start in January 2019
Activated charcoal	955.5	Charcoal	Incineration	Start in January 2019
Tyvek Suits	74	Coton/Other	Incineration	Start in January 2019
Others (garbage bag, absorbant paper)	67		Incineration	Start in January 2019
<b>Total to incinerate</b>	<b>2,220.73</b>			
<b>TOTAL</b>	<b>14,897.414</b>			

Adonis, a local firm, will recycle the used empty bottles of Actellic® 300CS and incinerate empty sachets of SumiShield® 50 WG. Adonis has the capability and the Ministry of Environment’s authorization to do so. The same local firm will incinerate or recycle other materials and equipment out of use.

Adonis will recycle eligible items including plastics and metal. Adonis operates an incinerator in Antananarivo and has the necessary equipment. PMI VectorLink Madagascar has started treating the waste in January 2019 at the Adonis facility in Antananarivo.

Gloves and boots used during the spray campaign contain greater than 1 percent chlorine. If incinerated, they can create dangerous persistent organic pollutants (POPs). After decontamination (washing them with soap and water), the project team will dispose of such materials by donating them to the spray operators.

# 7. MONITORING AND EVALUATION

---

## 7.1 M&E OBJECTIVES AND METHODOLOGY

PMI VectorLink Madagascar identified a number of lessons learned from the previous IRS campaign. Based on these lessons, the project introduced improvements to the M&E system for the 2018 IRS campaign in accordance with the 2018 work plan with the goal of:

- Ensuring the accuracy of data collected and entered through training and supervision at all levels
- Streamlining and standardizing data processing to minimize errors
- Ensuring data security according to established protocols

The M&E Officer and the Database Manager led the M&E activities.

## 7.2 DATA MANAGEMENT AND PROCESSING

### 7.2.1 DATA COLLECTION

Data collection followed the protocols described in the 2018 work plan. The data collection forms were developed to ensure the collection of all PMI-requested indicators. Before the beginning of each mobilization and spraying operation, the project trained those involved in data collection on the data collection process and in completing all appropriate forms. Mobilizers who conducted door-to-door visits collected mobilization data and data on the spray by SOPs. Data collection forms went through several checks before being entered into the database.

### 7.2.2 DATA ENTRY

The PMI VectorLink Madagascar project employed a total of 67 DEC's (35 in the South East, 21 in the East and 11 in the South West). Each district had its own data entry center. Each DEC entered the data from the forms into the project's database. At the end of each day, DEC's sent a copy of the database in the "cloud" (online DropBox server) to forward the most recent data. DEC's entered spray data first by the summarized totals per SOP form, for quick insight into the spray campaign. Then, DEC's entered the "details", entering data line by line to ensure accuracy of the data entered. The DEC's completed data entry within two weeks after the end of the campaign.

### 7.2.3 STORAGE OF DATA

The DEC's stored all data collection forms in filing cabinets. They were filed by district, commune, and *fokontany*, and finally by date. At the end of the campaign, the forms were transferred and stored at the central warehouses (in Farafangana, Tamatave, and Toliara) in a secure location with controlled access.

At the end of each day, all the electronic files in the database were stored electronically in two different ways, including in the "back-up" folder available on the DEC's computer and in the online Dropbox server.

## 8. ENTOMOLOGY

---

Under the supervision of the PMI VectorLink Madagascar's Technical Director, the project's five entomological surveillance teams (each consisting of an entomologist and two assistants including two technicians from NMCP) performed all entomological surveillance activities.

The 2018 IRS campaign was the fifth round of spraying with pirimiphos-methyl (Actellic® 300 CS ) in the East Coast of Madagascar (Toamasina II, Brickaville and Fenerive Est districts), the first round with SumiShield® 50 WG in Farafangana and Vohipeno districts, after three rounds with pirimiphos-methyl in Farafangana and two rounds in Vohipeno. In the South West (Tulear II and Sakaraha), pirimiphos methyl (Actellic® 300 CS ®) was sprayed for the first time. Prior to spraying, there was full susceptibility to pirimiphos-methyl and clothianidin in malaria vectors (see Annex J for wall bio assay sites and insecticide used).

This report highlights only the results of the wall bioassays conducted. Data on vector behavior, density, and insecticide resistance will be reported in the entomology progress report and final report:

- IRS quality assurance and decay rate monitoring in nine sites: Ambodifaho, Brickaville district; Vohitrambato in Toamasina II district; Mahambo/Antsikafoka in Fenerive East district; Mahatsinjo, Mananjary district; Ampasimpotsy, Manakara district; Lanivo, Vohipeno district; Manambotra Sud, Farafangana district; Tsaragiso, Tulear II district and Miary Lamatihy, Sakaraha district.
- Vector density, species composition and behavior in 12 sites : The same sites as for IRS quality assurance and decay rate monitoring, excluding Sakaraha, plus four control sites: Vavatenina in the East, Tsaravary, Mananjary district in Vatovavy Fitovinany Region, Lopary, Vangaindrano district in the South East Region, Betaindambo, Tulear I district for the South West
- Insecticide resistance monitoring in 13 sentinel sites; the same sites as for vector density, species composition and behavior plus Miary Lamatihy in Sakaraha.

Fumigant bioassays were also carried out in each tested house to determine the contribution of airborne effects of pirimiphos-methyl to overall mortality in cone bioassays. Ten houses per site were tested for wall bioassay. A small wire cage measuring 15cm by 10cm covered with untreated polyester netting material was placed approximately 10cm from a sprayed wall at about 1m above the floor. Exposure time was 30 minutes, with mortality subsequently recorded 24 hours later.

### 8.1 CONE BIOASSAY TEST RESULTS

PMI VectorLink Madagascar conducted monthly cone bioassay tests using the World Health Organization (WHO) procedure to assess the residual effectiveness of insecticides sprayed during the 2018 IRS campaign. Since the transport of larvae or adult susceptible mosquito colony (Kisumu strain) is challenging, all cone bioassay tests were performed with local wild adult mosquitoes reared from field-collected larvae and pupae. The mosquitoes were exposed to the sprayed surfaces for 30 minutes and the "knock-down" rate was recorded at 30 minutes and 60 minutes post exposure. The vector mortality was observed after a 24-hour recovery period for pirimiphos-methyl; delayed mortality of Sumishield® 50 WG was supposed to be recorded for seven days. But in most cases, 100 percent mortality was achieved within a 48-hour holding period. When control mortality was between 5 percent and 20 percent, test mortality was corrected using Abbott's formula. The residual life of pirimiphos-methyl Actellic 300CS® (an organophosphate) was tested in the sentinel sites of Brickaville, Vohitrambato and

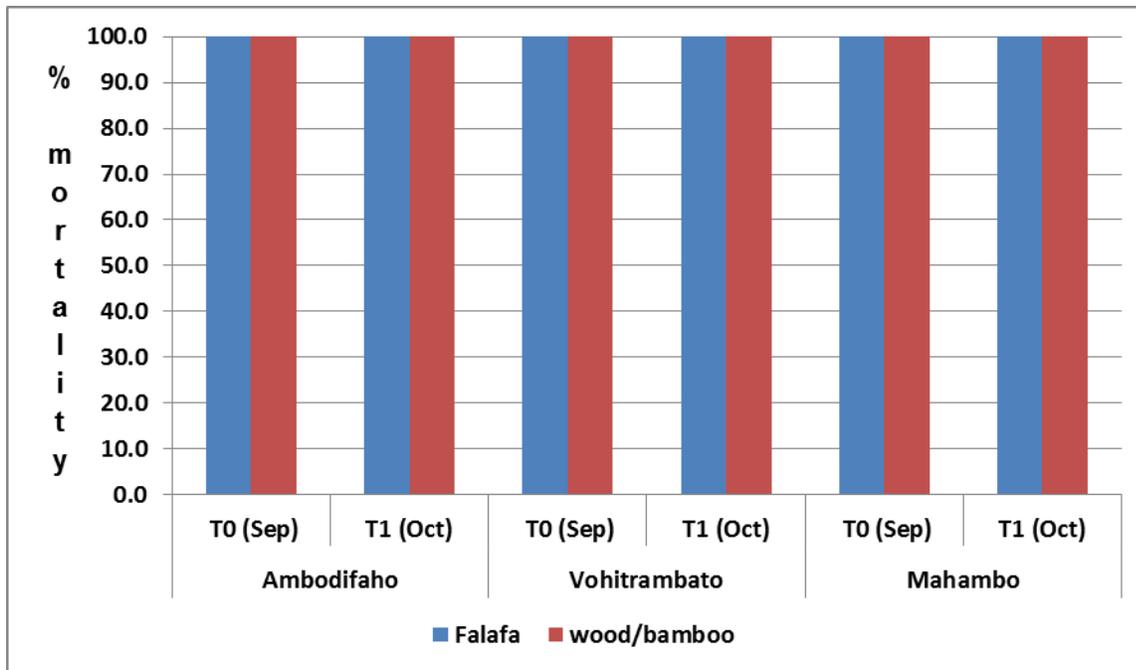
Mahambo/Antsikafoka in the East, Mahatsinjo and Ampasimpotsy in the South East, in Tsaragiso and Miary Lamatihy in the South West. The residual life of clothianidin, SumiShield® 50 WG® (a neonicotinoid) was tested in the sentinel sites of Manambotra Sud and Lanivo/Anosy.

In the East and the South East sites, most houses have walls made out of wood or *falafa* (branches of traveler’s palm). In the South west of Madagascar, most of the structures are made of mud or concrete brick; however, tests were also performed on the wooden doors of each house tested to assess the efficacy of the insecticide on wood.

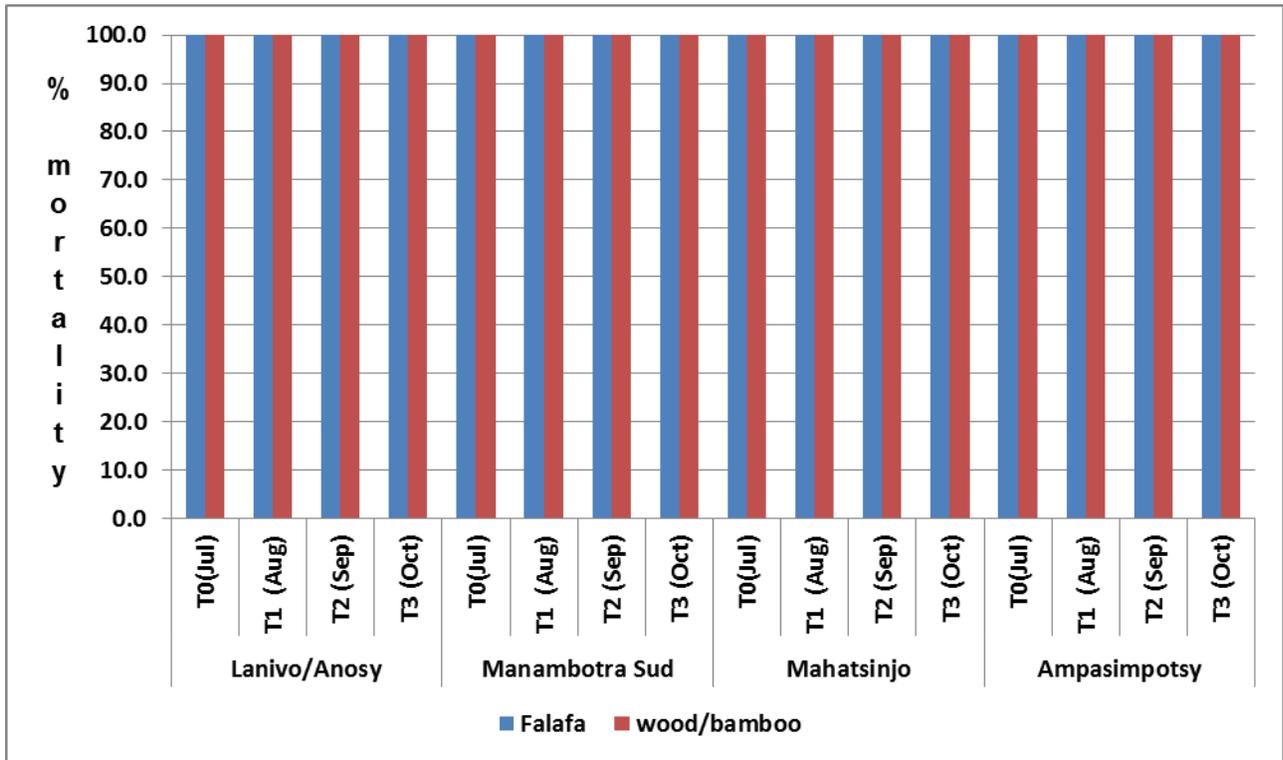
In each site, four houses with *falafa*, mud, wood surfaces sprayed with insecticides were randomly sampled and used for the test.

During the first week of IRS campaigns in the East Coast, in the South East and in the South West, PMI VectorLink Madagascar conducted cone bioassay tests to assess whether the quality of the spraying was satisfactory. The results indicated that the spray quality, both in the East Coast and in the South East, was good with mortality being 100 percent for all the structures sampled. In the South East, three months after spraying (T3- October 2018), pirimiphos-methyl (Actellic® 300 CS ) and clothianidin (SumiShield® 50 WG®), showed 100 percent effectiveness in all types of wall. In the East coast and in the South West, the results, observed after one month, showed 100 percent mortality (see Figure 8 and Figure 9).

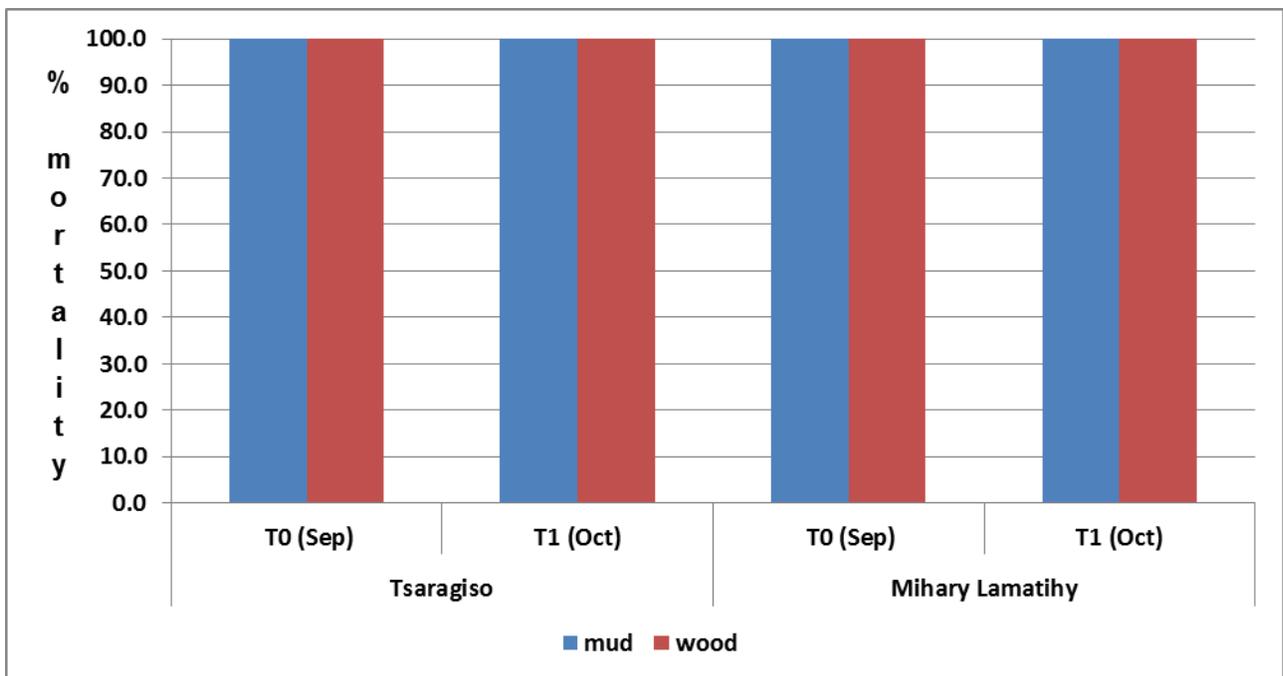
**Figure 7: Residual effectiveness observed for pirimiphos-methyl 300 CS (organophosphates) in the East Coast**



**Figure 8: Residual effectiveness observed for Pirimiphos-Methyl 300 CS (Organophosphates) in Mahatsimjo and Ampasimpotsy and for Clotianidin 50 WG (neonicotinoid) in Lanivo/Anosy and Manambotra Sud, South east**



**Figure 9: Residual effectiveness observed for Pirimiphos-methyl 300 CS (organophosphates) in the South West:**



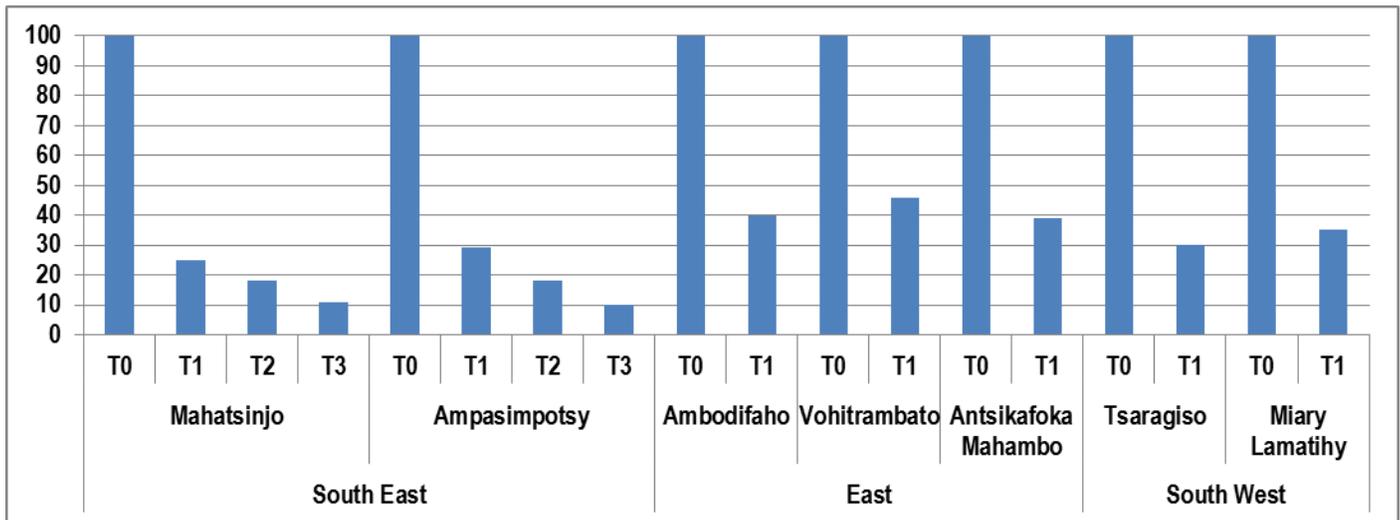
The results of wall bioassays indicated 100 percent mortality for all the structures sampled at T0, T1, T2 and T3 in the South East and T0 and T1 in the East and the South West.

## 8.2 FUMIGANT TEST

Airborne tests were conducted in the seven sites sprayed with Actellic® 300 CS, using the standard protocol at T0 (one week after spraying) and repeated monthly until the mosquito mortality drops to 20 percent for two consecutive months.

The results for fumigant effect of pirimiphos-methyl 300 CS showed that mortality was 100% in all the sites. However, the mortality decreased to 25% at T1 (one month after T0), 18 percent at T2 (one month after T1) and 11 percent at T3 (one month after T2) in Mahatsinjo and 29.3 percent at T1, 18 percent at T2 and 10 percent at T3 in Ampasimpotsy. In the East coast and the South East, at T1, it decreases to 40 percent, 39 percent, 45.8 percent, 30 percent and 35 percent in Ambodifaho, Vohitrambato, Antsikafoka Mahambo, Tsaragiso and Miary Lamatihy, respectively.

**Figure 10: Results of Fumigant Tests**



The results of the fumigant effect confirmed good quality of spray. The mortality rate remains at 100 percent even after the fumigant effect have decreased. The results with SumiShield® 50 WG sprayed sites showed 100 percent mortality from T0 through T3 after 48-hour exposure. This also confirms good spray quality in both sites.

## 9. GENDER

The PMI VectorLink Madagascar project emphasized increasing the number of women hired during the 2018 IRS campaign, especially in supervisory roles. The team met and spoke with local authorities about the key role of women for the project to achieve its goals and for communities in terms of equal access to economic empowerment. During the recruitment process, women candidates were prioritized if they met the job requirements. Goizper pumps, which are lighter to carry compared to Hudson pumps, were deployed to the spray sites. The project ordered new overalls and boots which correctly fit most of Malagasy women's sizes.

Before the campaign began, the gender focal point trained all staff on gender awareness and sexual harassment. The same training was given during the training of trainers for seasonal staff.

During the campaign, gender awareness and sexual harassment guidelines (Annex D) were posted in each warehouse. In addition, the project sent SMS reminders to each sector manager on gender awareness and sexual harassment. To date, there have not been complaints regarding sexual harassment reported to the project gender focal point.

**Table 15: Comparison of proportions of women in supervisory role between IRS campaigns from 2014 to 2018 by gender**

Position	IRS Campaign 2014	Proportion	IRS Campaign 2015	Proportion	IRS Campaign 2016	Proportion	IRS Campaign 2017	Proportion	IRS Campaign 2018	Proportion
M&E Assistant	0/8	0.0%	3/4	75.0%	3/5	60.0%	3/8	37.5%	8/9	88.9%
District Coordinator Assistant	N/A		N/A		N/A		1/8	12.5%	1/10	10.0%
Finance Assistant	8/8	100.0%	3/4	75.0%	5/6	83.3%	8/8	100.0%	10/10	100.0%
Sector Manager	3/46	6.5%	20/65	30.8%	29/98	29.6%	55/179	30.7%	66/187	35.3%
Team Leader	22/111	19.8%	99/198	50.0%	110/222	49.5%	109/339	32.2%	132/390	33.7%
<b>TOTAL</b>	<b>33/173</b>	<b>19.1%</b>	<b>125/271</b>	<b>46.1%</b>	<b>147/331</b>	<b>44.4%</b>	<b>176/542</b>	<b>32.5%</b>	<b>246/606</b>	<b>40.6%</b>

**Table 16: Comparison of proportions of women in spray team between IRS campaigns from 2014 to 2018 by gender (percentage of women)**

Position	IRS Campaign 2014	Proportion	IRS Campaign 2015	Proportion	IRS Campaign 2016	Proportion	IRS Campaign 2017	Proportion	IRS Campaign 2018	Proportion
<b>Sector Manager</b>	3/46	6.5%	20/65	30.8%	29/98	29.6%	55/179	30.7%	66/187	35.3%
<b>Team Leader</b>	22/111	19.8%	99/198	50.0%	110/222	49.5%	109/339	32.2%	132/390	33.8%
<b>Spray Operators</b>	25/559	4.5%	197/960	20.5%	203/1,112	18.3%	354/1,685	21.0%	360/1,934	18.6%
<b>TOTAL</b>	<b>50/716</b>	<b>7.0%</b>	<b>316/1,223</b>	<b>25.8%</b>	<b>342/1,432</b>	<b>23.9%</b>	<b>518/2,203</b>	<b>23.5%</b>	<b>558/2,511</b>	<b>22.2%</b>

The overall percentage of women working with the PMI VectorLink Madagascar project during the 2018 IRS campaign remained steady compared to the 2017 IRS campaign. The team, through its continued efforts and collaboration with local authorities since 2015 to hire more women in the South East, East and South West (despite the insecurity and cultural context), was able to recruit more women than expected.

# 10. NATIONAL CAPACITY BUILDING

---

One reason for the success of the 2018 IRS campaign has been the effective collaboration between the Malaria Control Directorate (DLP), the Regional Directorates of Health, the District Public Health Services involved and the PMI VectorLink Madagascar project team.

This collaboration took the form of mutual capacity buildings throughout the whole 2018 IRS campaign process. The success of the campaign also stems from the effective participation of the local community, represented by the traditional leaders and chief of Fokontany (village). In the preparatory phase, eight members of the DLP team participated in the master training session in Fiananrantsoa with practical sessions on the use of a Goizper pump for spraying. The DLP team also participated in the joint planning of the campaign, the various trainings, workshops or advocacy sessions for a successful IRS campaign.

During the campaign, a joint team of DLP-Abt Associates was established to monitor IRS activities. Every day, the team supervised each district using a smartphone to facilitate and standardize supervision.

At the end of each day, the team organized a "daily debriefing" via WebEx with the supervision team to analyze the results of the day as well as strengths and areas for improvement.

DLP has managers working in tandem with those of the PMI VectorLink Madagascar project to cover areas ranging from environmental compliance, entomological monitoring through social mobilization, training, logistics management, supervision and field operations' coordination.

# II. CHALLENGES AND LESSONS LEARNED

---

PMI VectorLink Madagascar encountered several challenges which varied according to the location of the campaign. Below are the lessons learned and recommendations:

## Challenges:

- ❖ Conduct spray operations in sub urban areas of Tulear and Manakara was really challenging with the high level of refusals due to the fact that people were not willing to remove the large amount of household items they had. Please see Annex H for reasons of refusal.
- ❖ Implementation of IRS operations in district like Manakara with important organic agriculture and beekeeping groups was very challenging,
- ❖ In the South West, security challenges were evident and the project was obliged to adjust its strategy to take into account this security context.

## Lessons learned

- ❖ The involvement of the chief Fokontany and CHWs in IEC mobilization and collaboration with other implementing partners has contributed to the improvement of the IRS acceptance.
- ❖ Collaboration with decentralized structures of the Ministry of Agriculture, Ministry of Environment and Environmental protection NGOs has helped with the exclusion of protected areas, organic culture areas and beekeeping fokontanies
- ❖ USAID Environmental Compliance Office support and collaboration has also helped the team be in line with environmental compliance norms in Madagascar
- ❖ Communalization as an intervention approach made it possible to protect more populations compared to the previous IRS campaign. It is recommended to continue with this communalization strategy and optimize the logistics and transport resources available to the spray teams. Based on the recent experience in Sakaraha, the district based approach was helpful for both the improvement of supervision and security control. However, this IRS implementation strategy will be more cost effective with three to four operation sites per district as due to security reasons, several teams rode all together to the spray sites, which limited the number of rental cars.
- ❖ Improving the involvement and commitment of traditional, local, health and administrative authorities for IRS has greatly contributed to the good results and success of the 2018 IRS campaign. Advocacy has been very helpful in this regard and it will be good to improve the current strategy.
- ❖ Enhanced and more open collaboration with the DLP in the preparation, implementation, and supervision of the IRS 2018 through the establishment of teams at the district level, capacity building through training of DLP officers and the district health system is a model of transfer of competence.

- ❖ The involvement of women in the operations teams and in supervisory positions has enhanced the performance of SOPs and the contribution of women to malaria control. The team will continue to work with local stakeholders to increase the percentage of women employed in seasonal roles next year.
- ❖ mHealth (SMS based software) implementation has improved significantly and facilitated daily monitoring of SOP performance and the organization of supervision.
- ❖ The use of the Goizper pump has improved the quality of the spray and the performance of the sprayers (light and easy to maintain). This continues to be a great source of satisfaction for the spray teams as for the coordination of the project.
- ❖ Assistant District Coordinators, Operations Assistant and Assistant to M&E positions, and district storekeepers have been of great help in the implementation of IRS especially in the new district and remote areas.
- ❖ The mobile banking as payment method was successful. More than 52 percent of all field transactions in nine districts were conducted through mobile banking and more than 82 percent of the 2018 IRS seasonal workers were paid through mobile banking with Telma network. However, the PMI VectorLink project will work with all the network providers to be able to provide electronic individual wallets.

## **Recommendations**

- ❖ Continue communalization as an intervention approach, scaling up the "Fokontanisation" of the IEC, advocacy with traditional authorities at the district level, and collaboration with other implementing partners for synergy. Adjust the strategy to the field reality as was done in Sakaraha district in 2018 IRS campaign with one to four central operations site and maximum used of mobile soak pit and Tyvek in remote areas.
- ❖ Elaborate, under the leadership of the DLP, an exit plan to withdraw IRS from three East Coast districts (Brickaville, Fenerive East and Tamatave II) and South East (Manakara, Mananjary Farafangana, Vohipeno).
- ❖ Continue to use mobile banking where it's possible and create subaccount with all the services provider to be able to pay all the seasonal staff and costumers based on their usually mobile banking account.
- ❖ Continue collaboration with the DLP in a gradual transfer of skills in all areas
- ❖ Reinforce the use of the data control verification during the IRS campaign to increase & enhance its use by supervisors.

# ANNEX A:

## ITEMS PROCURED INTERNATIONALLY

---

	Stock before the campaign	Quantities purchased	Quantity used	Quantity in stock after the campaign
Insecticide (Actellic® 300CS)	68,648 (18,648 in stock + *50,000 from NMCP)	9,312	69,417	8,700
Insecticide (Sumishield 50WG)	0	18,827	18,807	20
Standard gloves length 19"	24	1,512	558	978
Tyvek	52	400	336	116
Respirator mask with exhalation valve	21,248	64,680	41,076	44,852
Face Shields	0	2,000	603	1,397
Activated Charcoal	21	70	57	34
Face Brackets	0	1,500	17	1,483
Lens Cleaning Wipes	0	336	157	179
Interlocking Pre Moistened	0	43	0	43
First Aid Kit	0	120	74	46

*\*50,000 bottles of Actellic were donated by the NMCP*

## ANNEX B: SITE REPAIRS

Area	District	Operational sites	# of permanent soak pits	# of store rooms	Repairs made
	Fenerive Est	Ambatoharanana	1	1	Old soak pit re-use Fence repaired
		Vohilengo	1	1	Old soak pit re-use Fence repaired
		Ampasimbe Manantsatrana	1	1	Old soak pit re-use Fence repaired
		Ampasina Maningory	2	1	New construction
		Mahambo	2	1	New construction
		Mahanoro	2	1	Old soak pit re-use Fence repaired
		Antsiatsiaka	1	1	Old soak pit re-use Fence repaired
		Vohipeno	1	1	Old soak pit re-use Fence repaired
		Fenerive Centre	2	1	New construction
	Toamasina II	Antetезambaro	1	1	Old soak pit re-use Fence repaired
		Foulpointe	1	1	Old soak pit re-use Fence repaired
		Ambalamanasy	1	1	Old soak pit re-use Fence repaired
		Sahambala	1	1	Old soak pit re-use Fence repaired
		Fanandrana	1	1	New construction
		Ambodilazana	1	1	Old soak pit re-use Fence repaired
		Amboditandroho	1	1	Old soak pit re-use Fence repaired
		Andranobolahy	1	1	Old soak pit re-use Fence repaired
		Ampasimbe Onibe	1	1	Old soak pit re-use Fence repaired
		Andondabe	1	1	Old soak pit re-use Fence repaired
	Brickaville	Brickaville centre	1	1	New construction
		Anjahamana	1	1	Old soak pit re-use Fence repaired
Mahatsara		1	1	Old soak pit re-use Fence repaired	

Area	District	Operational sites	# of permanent soak pits	# of store rooms	Repairs made
		Ambalarondra			Old soak pit re-use Fence repaired
		Andovoranto			Old soak pit re-use Fence repaired
		Ambinaninony			Old soak pit re-use Fence repaired
		Ranomafana			Old soak pit re-use Fence repaired
South East	Vohipeno	Vohipeno			New concept Soak Pit
		Mahazoarivo			Old soak pit re-use Fence repaired
		Anoloka			New concept Soak Pit
		Ilakatra			Old soak pit re-use Fence repaired
		Zafindrafady			Old soak pit re-use Fence repaired
		Andemaka			Old soak pit re-use Fence repaired
		Vohindava			New concept Soak Pit
		Ifatsy			Old soak pit re-use Fence repaired
		Nato			New concept Soak Pit
		Vohitrindry			New concept Soak Pit
	Farafangana	Farafangana			Old Soak pit re-use
		Evato			Old Soak pit re-use
		Anosy Tsararafa			New construction
		Ambalatany			Old soak pit re-use Fence repaired
		Mahabo mananivo			New construction
		Ihorombe			Old Soak pit re-use
		Vohilengo			New construction
		labohazo			Old soak pit re-use Fence repaired
		Efatsy			Old soak pit re-use Fence repaired
		Ankarana			Old soak pit re-use Fence repaired
	Manakara	Ampasimanjeva			New construction
		Analavory			Old soak pit re-use Fence repaired
		Lokomby			New concept Soak Pit
		Ambalaroka			New concept Soak Pit
		Amboanjo			New construction
		Manakara			New concept Soak Pit

Area	District	Operational sites	# of permanent soak pits	# of store rooms	Repairs made
		Marofarihy			New concept Soak Pit
		Anteza			Old soak pit re-use Fence repaired
		Ambalavero			Old soak pit re-use Fence repaired
		Vohimasy			Old soak pit re-use Fence repaired
		Sahasinaka			New concept Soak Pit
		Sahanambohitra			Old soak pit re-use Fence repaired
		Vohilava			New construction
	Mananjary	Sandrohy			New concept Soak Pit
		Mananjary			New concept Soak Pit
		Andranomavo			Old soak pit re-use Fence repaired
		Marosangy			Old soak pit re-use Fence repaired
		Antaretra			Old soak pit re-use Fence repaired
		Morafeno			Old soak pit re-use Fence repaired
		Mahavoky Nord			Old soak pit re-use Fence repaired
		Andonabe			New concept Soak Pit
		Ambohimiharina II			New concept Soak Pit
		Anosimparihy			New concept Soak Pit
		Namorona			New concept Soak Pit
		Manakana Nord			Old soak pit re-use Fence repaired
		Mahela			Old soak pit re-use Fence repaired

Area	District	Operational sites	# of permanent soak pits	# of store rooms	Repairs made
South West	Tuléar II	Ste Augusstin	1	1	New Construction
		Mitsinjo Betanimena	1	1	New concept Soak Pit
		Milenaka	1	1	New Construction
		Ankililoaka	1	1	New concept Soak Pit
		Antanimena	1	1	New concept Soak Pit
		Ambohimahavelona	1	1	New Construction
		Maromiandra	1	1	New Construction
		Behompy	1	1	New Construction
		Belalanda	1	1	New Construction
		Ankilimalinika	1	1	New Construction
		Manombo Sud	1	1	New Construction
		Soahazo	1	1	New Construction
		Ambolofoty	1	1	New Construction
		Anakao	1	1	New Construction
		Andranohinaly	1	1	New concept Soak Pit
		Beheloka	1	1	New Construction
	Sakaraha	Sakaraha	5	1	New Construction

# ANNEX C: NUMBER OF PEOPLE TRAINED

South East																				
Categories of People Trained	Training on IRS Delivery								Other Trainings											
	Training of Trainers: Spray Ops		Spray Operations		Data Entry		Logistics		IEC Mobilization		Public Health Training		PPE Washing		Financial training					
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F				
Logistics Assistant							2	0												
Financial Assistant															0	5				
M&E Assistant					0	4														
Data Entry Clerk					9	26														
Sector Manager	67	37																		
Store Keeper							37	68												
Team Leader			108	67																
Spray Operator			722	150																
Guardian																	M	F	214	0
Washer												2	113							
IEC Mobilizer									1,169	453										
Driver																			49	0
Public Health Agent											76	66								
Total M/F	67	37	830	217	9	30	39	68	1,169	453	76	66	2	113	0	5			214	0
Total/training	104		1,047		39		107		1,622		142		115		5		0		214	
<b>Grand Total</b>	<b>3,444</b>																			
<b>Total number of women trained in the South East</b>	<b>989 (28.7%)</b>																			
<b>Total number of men trained in the South East</b>	<b>2,455</b>																			

East																						
Categories of People Trained	Training on IRS Delivery								Other Trainings													
	Training of Trainers: Spray Ops		Spray Operations		Data Entry		Logistics		IEC Mobilization		Public Health Training		PPE Washing		Financial training		Enumeration training		Security		Transportation	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Logistics Assistant																						
Financial Assistant															0	3						
M&E Assistant					1	2																
Data Entry Clerk					8	13																
Sector Manager	29	15																				
Store Keeper							13	33														
Team Leader			99	46																		
Spray Operator			521	201																		
Guardian																	M	F	79	3		
Washer												2	84									
IEC Mobilizer									504	406												
Driver																				22	0	
Public Health Agent											36	50										
Total M/F	29	15	620	247	9	15	13	33	504	406	36	50	2	84	0	3			79	3	22	0
Total/training	44		867		24		46		910		86		86		3		0		82		22	
<b>Grand Total</b>	<b>2,170</b>																					
<b>Total number of women trained in the East</b>	<b>856 (39.4%)</b>																					
<b>Total number of men trained in the East</b>	<b>1,314</b>																					

South West																						
Categories of People Trained	Training on IRS Delivery								Other Trainings													
	Training of Trainers: Spray Ops		Spray Operations		Data Entry		Logistics		IEC Mobilization		Public Health Training		PPE Washing		Financial training		Enumeration training		Security		Transportation	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Logistics Assistant																						
Financial Assistant															0	2						
M&E Assistant					0	2																
Data Entry Clerk					7	4																
Sector Manager	25	14																				
Store Keeper							19	17														
Team Leader			51	19																		
Spray Operator			331	9																		
Guardian																		66	0			
Washer												1	34									
IEC Mobilizer									324	260												
Driver																				20	0	
Public Health Agent											21	31										
Enumerator																						
Supervisor of Enumeration																	456	262				
Total M/F	25	14	382	28	7	6	19	17	324	260	21	31	1	34	0	2	456	262	66	0	20	0
Total/training	39		410		13		36		584		52		35		2		718		66		20	
<b>Grand Total</b>	<b>1,975</b>																					
<b>Total number of women trained in South West</b>	<b>654 (33.1%)</b>																					
<b>Total Number of men trained in the South West</b>	<b>1,321</b>																					
<b>Grand total of people trained in all regions</b>	<b>7,589 WOMEN 2,499 (32.9%) MEN 5,090 (67.1%)</b>																					

# ANNEX D: GENDER AWARENESS AND SEXUAL HARASSMENT GUIDELINES

## TOROLALANA MOMBA NY ADY AMIN'NY FANARARAOTANA ARA-NOFO ETO ANIVON'NY TETIKASA PMI AIRS MADAGASCAR



- PMI AIRS MADAGASCAR DIA MIEZAKA HATRANY NY HAMETRAKA TOERA-PIASANA MIRINDRA SY MILAMINA HO AN'NY MPIASA REHETRA

- NY FIHETSIKA FANERENA AN-KOLAKA FILANA ARA-NOFO DIA MISY FIANTRAIKANY RATSY EO AMIN'NY FIZOTRAN'NY ASA

- MITERAKA KORONTANA ETO ANIVON'NY TOERA-PIASANA NY FANARARAOTANA ARA-NOFO

- IREO FIHETSIKA MIENDRIKA FANERENA AN-KOLAKA FILANA ARA-NOFO TSY NIRIANA (NINIANA NA TSY NINIANA NATAO) DIA TSY HO EKENA MIHITSY

- FADIO IREO FITENY MANAMBANY, MANOMPA, MANDAINGA NA FOMBA FJERY MIBA

- FADIO NY MIKASI-TANANA NA MANAO FIHETSIKA MANAMBANA © OLONA KA MAMPISY FIANTRAIKANY RATSY EO AMIN'NY FIZOTRAN'NY ASA

- FADIO NY MAMPISEHO SARY NA RAKI-TSARIMIHETSIKA MAMOAFADY

- TSY EKENA MIHITSY NY FAMPITAHORANA MPIASA MAMETRAKA FITARAINANA MOMBA NY FANARARAOTANA ARA-NOFO

APETRAHO ATO NY FITARAINANAO: ABT HELPLINE 001-888-928-4231 na [WWW.INTEGRITY-HELPLINE.COM/ABTASSOC.JSP](http://WWW.INTEGRITY-HELPLINE.COM/ABTASSOC.JSP)

TSY HANANANA INDRAFO NY FANARARAOTANA ARA-NOFO





U.S. President's Malaria Initiative

# ANNEX E: PMI VECTORLINK MADAGASCAR MONITORING AND EVALUATION PLAN INDICATOR MATRIX

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
<b>Objective I: Implementation of Malaria Vector Control Interventions</b>													
<b>I.1</b>	<b>Successfully execute IRS and other malaria vector control programs</b>												
I.1.1	Number and percentage of complete annual country work plans developed and submitted on-time	Project records Annually	Country	1; 100%	1; 100%	1; 100%		1; 100%		1; 100%		1; 100%	
I.1.2	Number of eligible structures targeted for spraying	Project records Annually	Country	578,563	586,768	TBD		TBD		TBD		TBD	
I.1.3	Number of eligible structures sprayed with IRS	Project records Annually	Country	491,778	548,789	TBD		TBD		TBD		TBD	
I.1.4	Percentage of total structures targeted for spraying that were sprayed with a residual insecticide (Spray Coverage)	Project records Annually	Country	85%	93.5%	85%		85%		85%		85%	
I.1.5	Number of people protected by IRS	Project records Annually	Country Sex Pregnant women Children <5	2,213,003	2,232,097 M: 1,113,088 F: 1,119,009  Pregnant Women: 85,821  Children <5: 328,092	TBD		TBD		TBD		TBD	
I.1.6	Number and percentage of vector control project country programs submitting an EOSR within 45 days after the end of spray (including completing MEP and EMMR)	Project Annually	Country	1; 100%	1; 100%	1; 100%		1; 100%		1; 100%		1; 100%	
I.1.7	Number of IRS country programs that conduct a Post-spray Data Quality Audit within 90 days of spray completion	Data Collection Forms Annually	Country	N/A	N/A	N/A		TBD		TBD		TBD	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
I.1.8	Number of Insecticide Treated Nets (ITNs) distributed, by channel	Project Records Annually	Country Channel	N/A	N/A	N/A		TBD		TBD		TBD	
I.1.9	Number and percentage of ITN country programs that conduct at least one process assessment of the quality of ITN distribution planning, the quality of household registration, and or ITN distribution implementation during a mass ITN distribution campaign	Project Records Annually	Country Channel	N/A	N/A	N/A		TBD		TBD		TBD	
I.1.10	Number and percentage of ITN country programs with operational routine monitoring systems for continuous ITN distribution, disaggregated by channel	Project Records Annually	Country Channel	N/A	N/A	N/A		TBD		TBD		TBD	
I.1.11	Number and percentage of countries completing ITN durability monitoring data collection on time as planned in a given project year	Project Records Annually	Country	N/A	N/A	N/A		TBD		TBD		TBD	
<b>I.2</b>	<b>Provide technical assistance and planning support for IRS and other integrated malaria vector control activities</b>												
I.2.1	Number of VC project training workshops targeting NMCP and other host country staff	Project Training Records Annually	Country Technical Area Job Function	N/A	N/A	TBD		TBD		TBD		TBD	
I.2.2	Number of NMCP and other vector control host country staff accessing DHIS2	DHIS2 Logs Annually	Country Job Function	N/A	N/A	TBD		TBD		TBD		TBD	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
<b>1.3</b>	<b>Ensure safe and judicious use of insecticides and other malaria vector control products</b>												
1.3.1	Number of vector control personnel trained in environmental compliance and personal safety standards in vector control implementation	Project Training Records Annually	Country Sex (# and %) Job Function	3,372	3,342 M: 2,425 (72.6%) F: 917 (27.4%)  Central Operations Assistant (4) Central Logistics Assistant (2) Environmental Compliance Assistant (3) District Coordinator Assistant (10) Sector Manager (187) District Warehouse Keeper (10) Commune Warehouse Keeper (187) Team Leaders (390) Spray Operators (1934) Moto courier (66) Washers (236) Porters (313)	TBD		TBD		TBD		TBD	
1.3.2	Number of health workers receiving insecticide poisoning case management training	Project Training Records Annually	Country Sex (# and %)	289	280 M: 133 (47.5%) F: 147 (52.5%)	TBD		TBD		TBD		TBD	
1.3.3	Number of adverse reactions to pesticide exposure documented	Incident Report Forms Annually	Country Type of Exposure	0	0	0		0		0		0	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
<b>1.4</b>	<b>Strengthen capacity of NMCPs, vector control personnel, and other institutions to implement and manage IRS and other vector control activities</b>												
1.4.1	Total number of people trained to support VC in targeted areas <sup>1</sup>	Project Training Records Annually	Country Sex (# and %) VC Intervention Type	3,360	2,511 M: 1,953 (77.8%) F: 558 (22.2%)  VC Intervention: IRS	TBD		TBD		TBD		TBD	
1.4.2	Number of people trained during IRS Training of Trainers	Project Training Records Annually	Country Sex (# and %)	260	187 M: 121 (64.7%) F: 66 (35.3%)	TBD		TBD		TBD		TBD	
1.4.3	Total number of people hired to support VC in target districts	Project Records Annually	Country Sex (# and %) Job Function VC Intervention Type	3,360	7,642 M: 5,267 (68.9%) F: 2,375 (31.1%) Enumerators/ Supervisors (718) Central Operations Assistant (4) Central Logistics Assistant (2) Central ITC Assistant (1) Central Financial Assistants (3) District Financial Assistants (10) E-Inventory Developer Assistant (1)	TBD		TBD		TBD		TBD	

<sup>1</sup> The definition of this indicator was changed since the first submission of the MEP to include only SOPs, TLs, and Supervisors; hence the discrepancy between the target and results for Y1.



#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
1.4.4	Number of government/district officials who acted as supervisors during VC campaigns	Project Records Annually	Country VC Intervention Type	45	37 VC Intervention Type: IRS	TBD		TBD		TBD		TBD	
<b>1.5 Promote gender equality in all facets of planning and implementation</b>													
1.5.1	Number of women hired to support VC campaigns	Project Records Annually	Country Returning female seasonal workers hired in a more senior capacity	1,176; 35%	2,375 ;31.1%	TBD; 40%		TBD; 45%		TBD; 50%		TBD; 50%	
1.5.2	Number and percentage of women hired in supervisory roles in target areas for vector control activities	Project Records Annually	Country VC Intervention Type Job Function	307; 50%	246; 40.6%  VC Intervention Type: IRS District M&E Assistant (8/9) District Coordinator Assistant (1/10) Finance Assistant (10/10) Sector Manager (66/187) Team Leader (132/390)	TBD; 50%		TBD; 50%		TBD; 50%		TBD; 50%	
1.5.3	Number and percentage of staff (permanent and seasonal) who have completed gender awareness training	Project Training Records Annually	Country Sex Job Function	248; 100%	214; 86.3% M: 139 F: 75	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
1.5.4	Number and percentage of women in senior leadership roles in VectorLink country offices	Project Records Annually	Country Sex (# and %)	1; 25%	1; 25%	TBD; 50%		TBD; 50%		TBD; 50%		TBD; 50%	
<b>1.6 Implement and support social behavioral change communication and mobilization activities</b>													
1.6.1	Number of radio spots and talk shows aired	Project Records Annually	Country VC Intervention Type	1,944	1,689	TBD		TBD		TBD		TBD	
1.6.2	Number of print materials disseminated	Project Records Annually	Country VC Intervention Type	551,168	403,684  Fliers: 385,482; Posters: 18,000; Banners:202	TBD		TBD		TBD		TBD	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
1.6.3	Number of people reached with vector control and/or SBCC messages via door-to-door messaging	Project Records Annually	Country VC Intervention Type Sex	885,200	1,197,346 VC Intervention: IRS M: 548,641 W: 648,705	TBD		TBD		TBD		TBD	
1.6.4	Number and percentage of people who feel that the proposed action (sleeping under an ITN/accepting IRS) will reduce their risk of malaria	Project Records Annually	Country	N/A	N/A	TBD		TBD		TBD		TBD	
1.6.5	Number and percentage of people with a favorable attitude toward the practice/product (i.e., ITNs, IRS)	Project Records Annually	Country VC Intervention Type	N/A	N/A	TBD		TBD		TBD		TBD	
1.6.6	Number and percentage of people who believe that the majority of their friends and community members practice the behavior	Project Records Annually	Country VC Intervention Type	N/A	N/A	TBD		TBD		TBD		TBD	
<b>1.7</b>	<b>Environmental compliance</b>												
1.7.1	Number and percentage of SEAs (with EMMPs) or Letter Reports submitted at least 60 days prior to the commencement of vector control campaigns	Project Records Annually	Country	1; 100%	1; 100%	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
1.7.2	Number and percentage of permanent and mobile soak pits inspected and approved prior to IRS campaigns	Project Records Annually	Country Soak Pit Type	495; 100%	471; 100% Fixed Soak pits: 97 Mobile Soak Pits: 374	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
1.7.3	Number and percentage of storehouses inspected and approved prior to IRS campaigns	Project Records Annually	Country Storehouse Type	103; 100%	102; 100% Central Warehouses: 3 District warehouses: 9 Operational Sites Warehouses: 90	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
1.7.4	Number and percentage of fixed soak pits that are compliant with PMI's Best Management Practices	Project Records Annually	Country	101; 100%	97; 100%	TBD; 70%		TBD; 80%		TBD; 90%		TBD; 90%	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
<b>2. Entomological and Epidemiological Data to Drive Decision-Making</b>													
<b>2.1</b>	<b>Vector control activities monitored via entomological and epidemiological data</b>												
2.1.1	Number and percentage of project-supported entomological sentinel sites established to monitor vector bionomics and behavior (vector species, distribution, seasonality, feeding time, and location)	Entomological Reports Annually	Country VC Intervention Type	12; 100%	12; 100% IRS	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
2.1.2	Number and percentage of entomological monitoring sentinel sites measuring all five basic PMI entomological monitoring indicators (i.e., species composition, abundance, and seasonality of malaria vector; insecticide susceptibility and resistance intensity; mechanism of resistance; quality assurance and residual efficacy monitoring of IRS programs; or vector behavior: feeding time &, location)	Entomological Reports Annually	Country VC Intervention	9; 100%	9; 100% IRS	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 10%	
2.1.3	Number and percentage of entomological monitoring sentinel sites measuring at least one advanced PMI indicator (i.e., identification of mosquito infectivity; parity rates; or blood-meal analysis)	Entomological Reports Annually	Country VC Intervention	12; 100%	12; 100% IRS	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
2.1.4	Number and percentage of insecticide resistance testing sites that tested at least one insecticide from pyrethroid, organophosphate, carbamate, clothianidin, and chlorfenapyr insecticides	Entomological Reports Annually	Country Insecticide Type	13; 100%	13; 100% Organophosphate: pirimiphos-methyl 13; 100% organochlorine L: DDT 13; 100% pyrethroids: deltamethrin, permethrin, alphacypermethrin, lambda-cyhalothrin 13; 100% Carbamates: bendiocarb 13; 100% Neonicotinoid: clothianidin 13; 100% Pyrroles: chlorfenapyr 13; 100%	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
2.1.5	Number of wall bioassays conducted within 2 weeks of spraying to evaluate the quality of IRS	Entomological Reports Annually	Country	72; 100%	72; 100%	TBD		TBD		TBD		TBD	
2.1.6	Number and percentage of cone bioassays conducted within two weeks of spraying with greater than 98% test mortality recorded	Entomological Reports Annually	Country	72; 100%	72; 100%	TBD		TBD		TBD		TBD	
2.1.7	Number of wall bioassays conducted after the completion of spraying at monthly intervals to evaluate insecticide decay	Entomological Reports Annually	Country Insecticide Type	72/month during 8 months; 576; 100%	On going	TBD		TBD		TBD		TBD	
2.1.8	Number of vector susceptibility tests for different insecticides conducted in selected sentinel sites	Entomological Reports Annually	Country Insecticide Type	108	On going	TBD		TBD		TBD		TBD	
2.1.9	Number of countries with an integrated vector control analytics dashboard available for decision making	Project Records Annually	Country	N/A	N/A	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
2.1.10	Number of staff (VectorLink-contracted or non-VectorLink) trained in entomological monitoring	Project Training Records Annually	Country Sex (# and %) Job Function	N/A	N/A	TBD		TBD		TBD		TBD	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
<b>2.2 NMCPs develop country-level IRS and other malaria vector control strategies</b>													
2.2.1	Number and percentage of countries with an integrated malaria vector control strategy, including a plan for monitoring and managing insecticide resistance supported by the project	Project Records Annually	Country	N/A	N/A	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
2.2.2	Number and percentage of countries with integrated data and visualization landscaping for vector control decision making complete	Project Records Annually	Country	N/A	N/A	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
2.2.3	Number and percentage of countries that implement sub-national insecticide as part of an IRM strategy	Project Records Annually	Country	N/A	N/A	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
<b>2.3 Build capacity of NMCPs and local institutions to collect, analyze, and use data for strategic malaria control decision-making</b>													
2.3.1	Number of individuals trained from NMCPs and national institutions to review and interpret data for integrated vector control decision making	Project Training Records Annually	Country Job Function Organization	N/A	N/A	TBD		TBD		TBD		TBD	
2.3.2	Proportion of targeted individuals who report using new analytical tools and/or skills in their planning, resourcing, implementation, or measurement activities	Capacity Assessments Thrice Over Project Life	Country Job Function Organization	N/A	N/A	N/A		100%		N/A		100%	
<b>3. Procure insecticides for IRS and support the delivery and storage of IRS and other malaria vector control products</b>													
<b>3.1 Cost-effective procurement mechanism established</b>													
3.1.1	Number and percentage of insecticide procurements that had a pre-shipment QA/QC test at least 60 days prior to spray campaign	Procurement Records Annually	Country Insecticide Type	I; 100%	I; 100% Organophosphate:100% Clothianidin:100%	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
3.1.2	Number and percentage of insecticide procurements received on-time to allow for the initiation of spray operations as scheduled	Procurement Records Annually	Country Insecticide Type	I; 100%	I; 100% Organophosphate:100% Clothianidin:100%	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
3.1.3	Number and percentage of targeted countries with international equipment procurements, including PPE, received on-time to allow for the initiation of vector control campaigns as scheduled	Procurement Records Annually	Country VC Intervention Type	I; 100%	I; 100% IRS	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
3.1.4	Number and percentage of targeted countries with local procurements for PPE received on-time to allow for the initiation of spray operations as scheduled	Procurement Records Annually	Country	1; 100%	1; 100%	16; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
3.1.5	Number and percentage of countries with PPE procured according to workforce composition	Procurement Records Annually	Country	N/A	N/A	16; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
<b>3.2</b>	<b>Robust inventory management and logistics systems established</b>												
3.2.1	Number and percentage of logistics and warehouse managers trained in vector control supply chain management	Project Training Records Annually	Country VC Intervention Type Sex	196; 100%	197; 100% IRS M: 75 F: 1	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
3.2.2	Number and percentage of operations site warehouses where physical inventories can be verified by daily stock records	Inventory and Stock Records Annually	Country Insecticide Type	99; 100%	90; 100%	TBD; 100%		TBD; 100%		TBD; 100%		TBD; 100%	
3.2.3	Number and percentage of IRS countries that successfully completed spray operations without an insecticide stock-out	Inventory and Stock Records Annually	Country Insecticide Type	1; 100%	1; 100% Organophosphate: 100% Clothianidin: 100%	1; 100%		1; 100%		1; 100%		1; 100%	
<b>4. Innovation</b>													
<b>4.1</b>	<b>Conduct operational research or monitoring to scale up new tools, methods, and approaches</b>												
4.1.1	Number of operational research studies on promising new tools or new methods/approaches to existing tools that are implemented	Project Records Annually	Type of Innovation	N/A	N/A	TBD		TBD		TBD		TBD	
<b>4.2</b>	<b>Create and share knowledge through dissemination of best practices and lessons learned</b>												
4.2.1	Number of innovations, best practices, and other data or lessons learned shared with other partners or international institutions for global reporting on the Vector Learning Exchange	Project Records Annually	Country Technical Area	1	0	TBD		TBD		TBD		TBD	
4.2.2	Number of individual members who use the Vector Learning Exchange	Project Records Annually	N/A	33	1	TBD		TBD		TBD		TBD	
4.2.3	Number of symposia and/or presentations submitted to and accepted at global conferences	Project Records Annually	Country Technical Area	N/A	1 M&E: 1	TBD		TBD		TBD		TBD	
4.2.4	Number of success stories written or videos produced and shared on the VectorLink project website	Project Records Annually	Country	1	0	TBD		TBD		TBD		TBD	

#	Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregation(s)	Annual Targets and Results									
				Year 1		Year 2		Year 3		Year 4		Year 5	
				Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
4.2.5	Number of peer-reviewed journal articles submitted and accepted	Project Records Annually	Technical Area	N/A	N/A	TBD		TBD		TBD		TBD	
4.2.6	Number of critical guidance, standards, or plans that incorporate disseminated findings/best practices	Project Records Annually	Technical Area		Operations :	TBD		TBD		TBD		TBD	
<b>4.3</b>	<b>Develop and deploy cost-savings approaches</b>												
4.3.1	Number of innovative or novel approaches implemented to achieve cost savings in IRS and integrated malaria vector control programs	Project Records Annually	Country VC Intervention Type		0	TBD		TBD		TBD		TBD	
4.3.2	Number of cost effectiveness assessments of existing approaches in the implementation of IRS and integrated malaria vector control programs	Project Records Annually	Country VC Intervention Type		0								
<b>4.4</b>	<b>Cultivate public-private partnerships</b>												
4.4.1	Number of private sector entities engaged with to establish public private partnerships to increase the quality and coverage of malaria vector control activities globally	Project Records Annually	Country Private Sector Organization		0	TBD		TBD		TBD		TBD	

# ANNEX F: IEC MESSAGES

## IRS MESSAGES CONVEYED BY IEC/BCC MOBILIZERS

**I. OBJECTIVE:** Households prepare for IRS and agree to receive SOPs and let them inside their homes.

### II. MESSAGES

#### Messages for Advocacy (to community leaders)

- Inform the public in advance of the schedule and goal of IRS.
- Get involved in mobilization
- Facilitate the operation with the community (programming, consultation, etc.)

#### IEC messages:

##### **-To families:**

- **Prepare for spraying:**
  - ✓ Prepare 10 liters of water for preparing the product.
  - ✓ Remove food, clothing, cooking utensils, drinking water, furniture, etc..
  - ✓ Keep animals in a safe place and far enough away from home.
  - ✓ Remove anything that is hanging on the walls.
  - ✓ Put heavy furniture in the middle of the house.
  - ✓ Leave a space in the house to all SOPs to spray all the walls.
- **Receive SOPs:**
  - ✓ Give water to the SOPs.
  - ✓ Show SOPs the rooms to be sprayed.
  - ✓ Let SOPs work unhindered.
  - ✓ Stay out of the house.
- **After spraying:**
  - ✓ Do not wash the walls after spraying.
  - ✓ Close all doors for 2 hours before opening.
  - ✓ Leave the doors open for 30 minutes to allow air to flow.
  - ✓ Clean the house.
  - ✓ Throw in the latrines or bury dead mosquitoes or other insects, as well as dust.
  - ✓ Wash hands with soap.
  - ✓ Wait 6-9 months to paint the walls depending on the insecticides used.
  - ✓ In case of allergy: itching skin, wash with soap and water

## IRS MESSAGES CONVEYED BY IEC/BCC MOBILIZERS

### ***-To the community:***

- IRS is free.
- IRS protects the family and the entire region.
- IRS reduces mortality of pregnant women and children under 5 years.
- IRS protects the house for 3 to 6 months.
- IRS is safe for people and pets if all conditions are met.
- IRS is very effective if all structures are sprayed.
- IRS is funded by the American people

### **Messages to SOPs:**

- Facilitate the process by working with the community.
- Wear personal protective equipment (PPE).
- Ensure the effectiveness and quality of spraying.
- Do not cover the walls after spraying and for at least 6 months.

## ANNEX G: LIST OF FOKONTANY WITH PROTECTED AREAS IN TULEAR II

Commune	Fokontany with Protected Area	Protected Area
Ste Augustin	Sarodrano Ankilibe Lovokampy Ampasinihita Iantsoina Lavenombato Tanandava Lovokampy atsimo Ankerereaka Fenoarivo Manoroky	Tsinjoriake, Mangrove, Amoron'i Onilahy.
Ankililoaky	Ampanolora Ankatepoka Amborobosy Ankiliabo	Mikea.
Analamisampy	Analamisampy Behitsaka Nord Behitsaka Sud Ampasikibo Anjabetrongo Mahatsara Analabo Ankipola Ankoropeha	Mikea.
Soahazo	Andabotoka Analidolo	Mikea
Milenaka	Ampihamy Sud Andramy II Andranodehoka	Mikea.
Tsihanisia	Ranobe Akatrakatra Antapoly Tsiafanoke Beravy Antsoity Beravy Ambala Tsihanisiha II Beletsy	PK 32 Ranobe.
Ankilimaliniky	Ranobe Ankatrakatra Sakabera Sikilo Tanambe Naniriso	PK 32 Ranobe.

<b>Commune</b>	<b>Fokontany with Protected Area</b>	<b>Protected Area</b>
Manombo	Manombo Andrevo Bas Bekodoy Tsifota Fiherena Masay Fitsidika	Mikea, Mangrove
Marofoty	Antanimahery Marofoty Ankadibarika Antsonomarefy Beroroaha	Mikea
Tsifota	Salahary I Salahary II Tsifota Tsiandamba Andravona Ankarimifoka Bekodoy	Mikea, Mangrove
Ambohimahavelona	Maroamalona Ambohimahavelona Ambiky Mahaleotse Ankotrofoty	Amoron'i Onilahy
Antanimena	Antanimena	Amoron'i Onilahy
Betsinjaka	Andranomena Ankilimarovahatse Ankoronga	Tsinjoriake
Beheloka	Ankilimivony Beheloka Haut Itomboina Ampotaka	Tsimanampetsotsa
Efoetse	Non concerné	Tsimanampetsotsa
Belalanda	Tous les fokontany sur le RN9	PK 32 Ranobe, Mangrove
Maromiandra	Tous les fokontany	PK 32 Ranobe
Behompy	Ampasy Behantsia Anjanala Morahita Polia	PK 32 Ranobe

# ANNEX H: ENVIRONMENTAL MITIGATION AND MONITORING REPORT

**Table 17: Environmental mitigation and monitoring report Madagascar 2018**

List each Mitigation Measure from column 3 in the EMMP	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
1. Education, Technical Assistance, Training	<p>Many trainings were done for IRS stakeholders in the 09 districts:</p> <ul style="list-style-type: none"> <li>• Staff of basic health center</li> <li>• Sector Managers</li> <li>• Drivers</li> <li>• Team Leaders</li> <li>• Spray Operators</li> <li>• Warehouse keeper</li> </ul>		<p>Staff of basic health center: 290 Sector Managers: 187 Drivers: 55 Team Leaders: 390 Spray Operators: 1943 Warehouse keeper: 190</p>
2. Research and Development	<p>Periodic monthly supervision was carried out by the Technical Director in the various entomological sites. Trainings were given to entomology teams on the management of their laboratory and the waste management it produces</p>		
3. Public Health Commodities	N/A	N/A	N/A
4. Small-Scale Construction	<p>The rehabilitation of the storeroom was done according to the recommendation of the BMP and using local materials if possible. The rehabilitation work was done under the supervision of the ECO.</p>		PMI VectorLink Madagascar use 89 storerooms
5. Small-Scale Water and Sanitation	N/A	N/A	N/A
6. Nutrition	N/A	N/A	N/A

List each Mitigation Measure from column 3 in the EMMP	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
7. Vector Control	<ol style="list-style-type: none"> <li>1. In addition to the organophosphate, PMI VectorLink Madagascar during the year 2018 used a new class of insecticide: Neonicotinoid. An amended SEA has been validated by USAID on July 02, 2018</li> <li>2. Pre-contract inspection and certification of vehicles was conducted on the 16th of July, 2018 for the South East and from the 27th of August, 2018 for the East. Regarding the South West inspection was made in two time: Tuléar II on September, 10th and Sakaraha on September, 16th 2018</li> <li>3. Driver training was conducted on July 17th for the South East, August 27th for the East and respectively September 10th and 16th for the South West. About 55 drivers were trained for the 2018 spray campaign in 9 districts.</li> <li>4. All drivers had cell phones as a pre-requisite for hiring and were provided with PPE and spill kits after being trained. PMI VectorLink Madagascar conducted 3249 supervisions for the morning mobilization vehicle inspection.</li> <li>5. Initial pregnancy tests were conducted before hiring Spray Operators, Washers and Store Assistants from July 09 to July 20, 2018 for the South East and from August 20 to August 31, 2018 for the East. Regarding the South West, it is from September 03 to September 14, 2018</li> <li>6. Medical examinations were conducted for potential candidates as one of the benchmarks for selection of Spray Operators from July 16 to July 21, 2018 for the South East and from August 27 to September 1, 2018 for the East across the targeted IRS districts. For the South West, from September 10 to September 15, 2018</li> <li>7. Both International and local procurement were carried out successfully prior to all trainings</li> <li>8. The correct mixing procedure for pesticides, including triple rinse of the bottles, was included in all trainings. The Supervisors were trained together with the Team Leader as pump mechanics for the maintenance of the</li> </ol>		<ol style="list-style-type: none"> <li>1. The SumiShield 50 WG has been used in Farafangana District and Vohipeno District.</li> <li>2. For the South East, PMI VectorLink Madagascar contracted 32 vehicles and 19 vehicles for the East. For the South West, the number of vehicles used is 18</li> <li>3. 14 vehicles and drivers who worked in the South East continued to work in the East (4) and South West (10)</li> <li>8. 390 Team Leaders (175 in the South East, 145 in East Coast and 70 in South West) and 1943 Spray Operators (881 in the South East and 722 in East Coast and 340 in South West) were trained. Team Leaders were also trained in the maintenance of spray pumps.</li> <li>9. At the end of the campaign, each storeroom was decontaminated by washing with water and soap mixed with bleach.</li> <li>11. 219000 flyers, 18000 posters, 6461 T-shirts, 6461 caps, and 202 banners were distributed. 1689 radio spots</li> <li>12. Recommendations and instructions are shared with the resident. The resident was immediately informed of the measures to be taken and helped to prepare their houses properly before spraying. The information was given</li> </ol>

List each Mitigation Measure from column 3 in the EMMP	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
	<p>pumps</p> <p>9. Most of the storage facilities were donated to the project by the District Assemblies of the various districts. However, the end-of-day cleanup was solely the responsibility of the site managers and supported by the field supervisors at each operations site. AIRS Madagascar conducted 2178 supervisions for the end of day cleanup.</p> <p>10. The clean-up procedure for the pumps was done in the designated wash areas and supervised by the site managers</p> <p>11. PMI VectorLink Madagascar conducted sensitization campaigns and information before spraying. IEC materials were distributed among households</p> <p>12. 6846 supervisions were made and found 3 cases where the resident was not informed of spraying protocol and was not well prepared, 5 case where the resident was not informed of post spray requirement, 14 cases where the resident was not informed of exposure protocol (Instruct homeowners to wash itchy skin and go to health clinic if symptoms do not subside)</p> <p>13. Insecticide poisoning management was done for the health facility staff: from July 10 to July 14, 2018 for the South East and from August 20 to August 22, 2018 for the East. Regarding the South West, it is from September 04 to September 13, 2018.</p> <p>14. 570 inspections regarding storage facility were conducted</p> <p>15. 3249 supervisions on the transport of insecticides are made.</p> <p>16. Records of all pesticide receipts from central stores, issuances and returns of empties were kept on the stock cards with backups in ledger books at regional and district level, as well as the sub-districts warehouses. 570 controls were made regarding the documents of stock</p> <p>17. On average, one bottle / sachets is needed to spray</p>		<p>immediately to the beneficiaries so that they could know the steps to follow in the event of an accident</p> <p>13. 290 health facility staff were trained (142 in South East, 86 in East and 52 in South West)</p> <p>17. In the South East: 7.1 structures were sprayed per bottle / sachet, in the East 5.3 structures were sprayed per bottle, and in South West 6.4 structures per bottle.</p> <p>20. 187 Sector Managers and 190 Store keepers are trained</p> <p>21. Among the trainings, there is BMP, the port and the use of the PPE, the maintenance of the equipment's and the distances to respect for the beekeeping sites</p> <p>23. PMI VectorLink Madagascar use 97 soaks pits (46 in the South East, 30 in the East and 21 in South West). 374 mobile soak pits were built (178 for South East, 148 for East and 48 for South West)</p> <p>25. The new soak pit with concrete is functional during the year and did not require any repairs</p> <p>27. Currently, PMI VectorLink Madagascar finalizes the negotiation with Adonis for the start of waste treatment in December</p>

List each Mitigation Measure from column 3 in the EMMP	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
	<p>6.2 structures</p> <p>18. Visual examination of houses sprayed was conducted by observing the traces of the sprayed chemical of the walls, ceilings, and eaves. IRS technical staff and government supervisors conducted at least 188 examinations</p> <p>19. The Logistics and ECO ensured physical inventory taking during and after the spray season. 86 inspections were made.</p> <p>20. Sector Manager and Store keeper training was conducted in the South East from July 09 to July 14, 2018 and from August 20 to August 25, 2018 in the East Coast. For the South West, from September 03 to September 07, 2018</p> <p>21. Team Leader and Spray Operator training was conducted in the South East from July 16 to July 21, 2018 and from August 27 to September 01, 2018 in the East Coast. For the South West, from September 10 to September 15, 2018</p> <p>22. PMI VectorLink Madagascar had submitted the Waste Management Plan in Mai 2018 in accordance with the Best Management Practice.</p> <p>23. The selection of sites was done by the ECO and supervised by the COP according to the PMI BMPs. A lot of rounds of Pre-Season Environmental Compliance Assessment were conducted. For the South East 141 PSECA's were conducted (from June 01 to July 25, 2018) and for the East 57 PSECA's (from July 12 to September 3, 2018). Regarding South West, it is 51 PSECA's (from July 29 to September 17, 2018)</p> <p>24. All the soak pits were constructed as per directions in the BMP. During the PSECA, the ECO supervised the construction of all new soak pits. When the sprayers use the mobile soak pit, the sector manager informs the ECO or his assistants who will supervise the place of installation and use. Otherwise, written instructions were given to the team leaders to select installation locations and methods of use according to BMP</p>		

List each Mitigation Measure from column 3 in the EMMP	Status of Mitigation Measures	List any outstanding issues relating to required conditions	Remarks
	<p>25. All soak pits were cleared of vegetation and serve as a filter during the spray campaigns. These soak pits were functional during the campaign and did not require any repairs</p> <p>26. 570 inspections regarding storekeeper performance were conducted</p> <p>27. The ECO will monitor the post-spray campaign solid waste procedure and disposal from the district level to the central warehouse and to the final designation for proper disposal at Adonis</p> <p>28. All solid waste generated will be incinerated at a waste management and recycling company, Adonis Madagascar</p>		
8. Emergency Response	N/A	N/A	N/A

# ANNEX I: REASONS FOR REFUSALS

	Closed Structures	Refusal	Sickness	Family Event	Insecticide smell	Other	TOTAL
	2018	2018	2018	2018	2018	2018	2018
BRICKAVILLE	411	1112	1427	250	1,277	372	4,849
	<b>0.70%</b>	<b>2.00%</b>	<b>2.60%</b>	<b>0.40%</b>	<b>2.30%</b>	<b>0.70%</b>	<b>8.70%</b>
FENERIVE EST	435	913	1,665	200	1,784	-	4,997
	<b>0.50%</b>	<b>1.00%</b>	<b>1.90%</b>	<b>0.20%</b>	<b>2.00%</b>	<b>0.00%</b>	<b>5.70%</b>
TAMATAVE II	530	1257	1424	143	2,232	216	5,802
	<b>0.80%</b>	<b>1.80%</b>	<b>2.10%</b>	<b>0.20%</b>	<b>3.20%</b>	<b>0.30%</b>	<b>8.40%</b>
TOTAL EAST COAST	1,376	3,282	4,516	593	5,293	588	15,648
	<b>0.70%</b>	<b>1.60%</b>	<b>2.10%</b>	<b>0.30%</b>	<b>2.50%</b>	<b>0.30%</b>	<b>7.40%</b>
FARAFANGANA	165	864	794	208	115	423	2,569
	<b>0.20%</b>	<b>1.00%</b>	<b>0.90%</b>	<b>0.20%</b>	<b>0.10%</b>	<b>0.50%</b>	<b>3.00%</b>
MANAKARA	616	4,127	1,867	341	1,143	1,254	9,348
	<b>1.00%</b>	<b>6.40%</b>	<b>2.90%</b>	<b>0.50%</b>	<b>1.80%</b>	<b>1.90%</b>	<b>14.50%</b>
MANANJARY	535	1,203	565	151	710	271	3,435
	<b>1.10%</b>	<b>2.50%</b>	<b>1.20%</b>	<b>0.30%</b>	<b>1.40%</b>	<b>0.60%</b>	<b>7.00%</b>
VOHIPENO	229	376	400	165	83	132	1,385
	<b>0.50%</b>	<b>0.80%</b>	<b>0.80%</b>	<b>0.30%</b>	<b>0.20%</b>	<b>0.30%</b>	<b>2.90%</b>
TOTAL SOUTH EAST	1,545	6,570	3,626	865	2,051	2,080	16,737
	<b>0.60%</b>	<b>2.70%</b>	<b>1.50%</b>	<b>0.40%</b>	<b>0.80%</b>	<b>0.80%</b>	<b>6.80%</b>
SAKARAHA	428	407	166	38	150	46	1,235
	<b>1.60%</b>	<b>1.50%</b>	<b>0.60%</b>	<b>0.10%</b>	<b>0.60%</b>	<b>0.20%</b>	<b>4.70%</b>
TULEAR II	1,990	2,963	1,316	330	1,058	837	8,494
	<b>2.90%</b>	<b>4.30%</b>	<b>1.90%</b>	<b>0.50%</b>	<b>1.50%</b>	<b>1.20%</b>	<b>12.30%</b>
TOTAL SOUTH WEST	2,418	3,370	1,482	368	1,208	883	9,729
	<b>2.50%</b>	<b>3.50%</b>	<b>1.60%</b>	<b>0.40%</b>	<b>1.30%</b>	<b>0.90%</b>	<b>10.20%</b>

## ANNEX J: WALL BIO ASSAY SITES AND INSECTICIDE USED

---

Sites	Insecticides	Rounds#
Vohitrambato (Toamasina II)	pirimiphos-methyl (Actellic® 300 CS)	Five rounds (2014 – 2018)
Ambodifaho (Brickaville)	pirimiphos-methyl (Actellic® 300 CS)	Five rounds (2014 – 2018)
Mahambo/Antsikafoka (Fenerive Est)	pirimiphos-methyl (Actellic® 300 CS)	Five rounds (2014 – 2018)
Farafangana	pirimiphos-methyl (Actellic® 300 CS)	Three rounds (2015 – 2017)
	Clothianidin (SumiShield® 50 WG)	First round 2018
Vohipeno	pirimiphos-methyl (Actellic® 300 CS)	Two rounds (2016 – 2017)
	Clothianidin (SumiShield® 50 WG)	First round 2018
Tsaragiso (Tulear II)	pirimiphos-methyl (Actellic® 300 CS)	First round 2018
Miary Lamatihy (Sakaraha)	pirimiphos-methyl (Actellic® 300 CS)	First round 2018