



U.S. PRESIDENT'S MALARIA INITIATIVE



# THE PMI VECTORLINK PROJECT

## 2018 MALAWI END OF SPRAY REPORT

**SPRAY CAMPAIGN:  
OCTOBER 2 – NOVEMBER 7, 2018**

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# ACRONYMS

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<b>ADC</b>	Area Development Committee
<b>AEHO</b>	Assistant Environmental Health Officer
<b>AIRS</b>	Africa Indoor Residual Spraying
<b>BCC</b>	Behavior Change Communication
<b>BMP</b>	Best Management Practices
<b>CFV</b>	Control Flow Valve
<b>CS</b>	Capsule Suspension
<b>DCV</b>	Data Collection Verification
<b>DEC</b>	Data Entry Clerk
<b>DHIS2</b>	District Health Information System 2
<b>DEHO</b>	District Environmental Health Officer
<b>DHO</b>	District Health Office
<b>DHPO</b>	District Health Promotion Officer
<b>DOS</b>	Directly Observed Spraying
<b>DSA</b>	Daily Subsistence Allowance
<b>EAD</b>	Environmental Affairs Department
<b>ECO</b>	Environmental Compliance Officer
<b>FSP</b>	Fixed Soak Pit
<b>GR</b>	Geographical Reconnaissance
<b>HC4L</b>	Health Communication for Life Project
<b>HSA</b>	Health Surveillance Assistant
<b>IEC</b>	Information, Education, and Communication
<b>IRM</b>	Insecticide Resistance Management
<b>IRS</b>	Indoor Residual Spraying
<b>ITN</b>	Insecticide-treated Net
<b>MAC</b>	Malaria Alert Centre
<b>M&amp;E</b>	Monitoring and Evaluation
<b>mHealth</b>	Mobile Health
<b>MOH</b>	Ministry of Health
<b>MOU</b>	Memorandum of Understanding
<b>NGO</b>	Nongovernmental Organization

<b>NGenIRS</b>	Next Generation IRS
<b>NMCP</b>	National Malaria Control Program
<b>ONSE</b>	Organized Network of Services for Everyone’s Health
<b>PMI</b>	President’s Malaria Initiative
<b>PMSP</b>	Permanent Mobile Soak Pit
<b>PMT</b>	Performance Management Tracker
<b>PPE</b>	Personal Protective Equipment
<b>PSECA</b>	Pre-Season Environmental Compliance Assessment
<b>SEA</b>	Supplementary Environmental Assessment
<b>SOP</b>	Spray Operator
<b>STTA</b>	Short-term Technical Assistance
<b>TL</b>	Team Leader
<b>TOT</b>	Training of Trainers
<b>USAID</b>	United States Agency for International Development
<b>VCTWG</b>	Vector Control Technical Working Group

# EXECUTIVE SUMMARY

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Abt Associates supports the implementation of indoor residual spraying (IRS) in Malawi through the PMI VectorLink Project funded by the United States Agency for International Development (USAID) under the President's Malaria Initiative (PMI). The objective of the PMI VectorLink Project is to support the planning and implementation of IRS programs, and other proven life-saving malaria vector control interventions. To achieve this objective, VectorLink Malawi, in collaboration with the Malawi government, conducted IRS from October 2 to November 7, 2018. VectorLink Malawi targeted 118,000 structures across six traditional authorities in Nkhosokota District using the organophosphate, Actellic 300 Capsule Suspension (CS). VectorLink Malawi successfully completed its 2018 IRS campaign well within the scheduled timeframe designated by the National Malaria Control Program (NMCP).

Below are the key project achievements and highlights:

## Key Results:

- 109,209 structures mobilized; 238,057 people reached directly with IRS information, education and communication messages during house-to-house mobilization.
- Overall, across all cadres, 1,114 individuals were trained using PMI funds to support IRS activities.
  - 323 people, mostly government staff, were engaged to support mobilization.
  - 634 people were hired as seasonal staff, 40 percent (n=256) were women.
- 112,264 out of 118,355 structures found by spray operators (SOPs) were sprayed, achieving a coverage rate of 94.9 percent in Nkhosokota District. In total, 501,324 residents received protection, including 90,953 (18.1 percent) children under five and 11,066 (2.2 percent) pregnant women.
- 47,743 bottles of insecticide were used to spray 112,264 structures, with a utilization ratio of approximately 2.4 structures sprayed per bottle.
- Spray operators sprayed on average 9.8 structures per day.
- The Unitaid-funded Next Generation IRS (NGenIRS) Project provided a co-payment on the procurement of insecticide, resulting in a savings of \$273,840 compared to the full market price of insecticide.

## Spray Planning and Supervision:

- Eight operations sites and two central warehouses were established.
- Key partnerships developed with the National Malaria Control Program and the Nkhosokota District Health Office and District Council, resulting in joint planning and supervision of all IRS activities.

## Environmental Compliance:

- Approval received for the Supplementary Environmental Assessment, Project Brief, and Environmental and Social Management Plan, fulfilling the requirements of USAID and the Malawi Environmental Affairs Department.
- All IRS contaminated waste, including 245kg of used masks, were incinerated at the Nkhosokota District Hospital. A total of 47,743 empty insecticide bottles, 565 visors, and 2,900 kg of uncontaminated carton boxes will be recycled. VectorLink Malawi disposed of 102 damaged gloves and 1,420 used dry cell batteries, which were encased prior to landfilling, at the Illovo dumping site.

**TABLE ES-1: 2018 IRS CAMPAIGN SUMMARY RESULTS**

Number of districts covered by PMI-supported IRS in 2018	1 district: Nkhotakota
Insecticide used in 2018 IRS	Organophosphate (Actellic 300CS)
Structures targeted for spray in 2018 (structures estimated based on Health Surveillance Assistant Survey Data*)	118,000
Structures found by spray operators in 2018	118,355
Number of structures sprayed by PMI-supported IRS in 2018	112,264
2018 spray coverage	94.9%
Population protected by PMI-supported IRS in 2018	501,324 (including 11,066 pregnant women and 90,953 children under 5 years)
Dates of PMI-supported IRS campaign	October 2, 2018 – November 7, 2018
Length of 2018 campaign	32 operational days
Number of people trained with funds from the U.S. Government to deliver IRS in 2018**	575 people (357 men, 218 women)***

\* See Section 2.1 for more information.

\*\* The PMI annual indicator for “people trained to deliver IRS” includes spray operators, team leaders, and supervisors; it excludes clinicians, data clerks, IEC mobilizers, IEC assistants, drivers, washers, porters, pump technicians, security guards, storekeepers, etc.

\*\*\*This includes site managers, spray supervisors, team leaders, and spray operators.

# I BACKGROUND

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In September 2017, Abt Associates was awarded a five-year malaria vector control contract, called the President's Malaria Initiative (PMI) VectorLink Project, funded by the U.S. Agency for International Development (USAID) through PMI. The PMI VectorLink Project builds upon the successes of the predecessor PMI Africa Indoor Residual Spraying (AIRS) Project. Its purpose is to support PMI in planning and implementing indoor residual spraying (IRS) and other proven life-saving malaria vector control interventions in 23 countries in sub-Saharan Africa, including Malawi. It also supports PMI and local governments in planning and implementing an integrated vector control approach.

IRS was last carried out in Malawi with PMI support in 2012. The 2012 program, which targeted the currently targeted district of Nkhonkhotakota, included both direct IRS implementation, through which 77,647 structures were sprayed using Actellic Emulsifiable Concentrate (EC), and capacity-building activities.

Under PMI VectorLink, PMI has renewed funding for IRS in Malawi, again targeting the district of Nkhonkhotakota where malaria is the leading cause of morbidity and mortality. According to District Health Information System 2 (DHIS2) data, the prevalence of malaria (as a percentage of outpatient department visits) was 51.7 percent in 2016/17. The aim of the IRS campaign is to drastically reduce the burden of malaria in Nkhonkhotakota District.

Throughout the 2018 spray campaign, VectorLink Malawi worked closely with the Ministry of Health (MOH), the National Malaria Control Program (NMCP), the Nkhonkhotakota District Health Office (DHO), the Nkhonkhotakota District Council, local nongovernmental organizations (NGOs), and community leaders to implement IRS in Nkhonkhotakota. The IRS campaign was carried out over the course of 32 days between October 2 and November 7, 2018.

The project also provided technical support to the following activities that are integral to IRS:

- Logistics: Logistics assessments, as well as procurement, shipping, delivery, and storage of all IRS materials.
- Information, Education, and Communication/Behavior Change Communication (IEC/BCC): Collaborated with NMCP and other local partners to coordinate IEC activities to raise awareness and encourage acceptance of IRS.
- Monitoring and Evaluation (M&E): Regular M&E tracked key programmatic indicators and checked the quality of IRS data collection.
- Environmental Compliance: Worked with the NMCP, DHO, and Environmental Affairs Department (EAD) to ensure environmental compliance through inspections before, during, and after spraying.
- Capacity Building: Training, skill development, and advocacy at the national and district levels as a means of ensuring quality spray and achieving IRS sustainability; NMCP and district health teams trained in coordination, implementation, and supervision of IRS activities.
- Entomological Support:
  - Comprehensive entomological monitoring activities in 11 sentinel sites in five districts carried out by the Malaria Alert Centre (MAC) of the University of Malawi College of Medicine; insecticide resistance monitoring and advanced entomological analysis that will generate critical data on the effectiveness of the spray program.
  - Development of an insecticide resistance management (IRM) plan in collaboration with Malaria Consortium, MAC, and NMCP.

- Strengthening of the national Vector Control Technical Working Group (VCTWG).
- Gender Mainstreaming: The project worked to integrate gender equality and female empowerment into IRS planning and implementation in line with USAID's Gender Equality and Female Empowerment Policy and VectorLink's Gender Strategy.

# 2 PRE-SEASON ACTIVITIES

## 2.1 SELECTION OF IRS DISTRICT

The NMCP and PMI selected Nkhonkhotakota District for IRS during the October 2018 campaign (see Figure 1). Nkhonkhotakota District was selected based on the following criteria: High malaria burden, demonstrated area of pyrethroid resistance, and a dense, non-urban population, all of which lower the operational costs per structure. Additionally, Nkhonkhotakota is one of 10 PMI focus districts receiving support for improving case management and routine epidemiological M&E systems; this will support evaluating the epidemiological impact of IRS. Finally, Nkhonkhotakota is one of the five districts where PMI already supports entomological monitoring; hence, baseline entomological data are available.

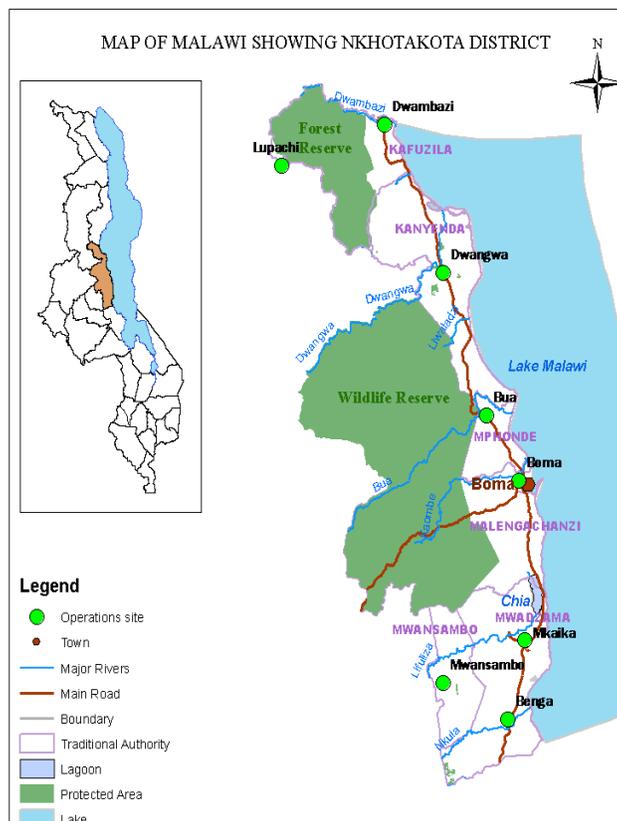
Because IRS had not been carried out in Nkhonkhotakota since 2012, there were no data from a prior year on which to base targets. The PMI VectorLink Project reviewed a variety of data sources – census data, the 2011 PMI-supported geographic reconnaissance data, and a 2017 survey completed by Nkhonkhotakota Health Surveillance Assistants (HSAs) – to determine realistic targets. In the end, the project used the 2017 HSA survey to develop estimates. The survey indicated that there were 80,830 households in the district and 480,362 persons. The average number of sleeping structures per household was 1.45, according to previous IRS data; therefore, the district was estimated to have 117,203 structures eligible for IRS, a figure that roughly agreed with the FY 2018 Malaria Operational Plan. The number of structures was rounded up to account for variations in the larger projections.

Table 1 summarizes the number of structures targeted per Traditional Authority.

**TABLE 1: TARGETED STRUCTURES BY TRADITIONAL AUTHORITY, NKHOTAKOTA DISTRICT**

Traditional Authority	# of Targeted Structures
Kafuzira	8,783
Kanyenda	37,211
Malengachanzi	25,075
Mphonde	6,945
Mwadzama	30,429
Mwansambo	9,557
TOTAL	118,000

**FIGURE 1: NKHOTAKOTA DISTRICT MAP**



## 2.2 INSECTICIDE SELECTION

Before the PMI VectorLink Project began, the NMCP, VCTWG, and PMI had chosen Actellic 300 Capsule Suspension (CS) for the 2018 spray campaign in Nkhhotakota. The insecticide was selected based on documented vector susceptibility data in Malawi. *Anopheles funestus*, the predominant local malaria vector in Nkhhotakota, have consistently shown susceptibility to organophosphates including pirimiphos-methyl (of which Actellic 300CS is a formulation). Documented data on residual life of Actellic 300CS in Malawi were also taken into consideration. Additionally, Actellic 300CS is among the insecticides approved for public health use by the Malawi Pesticide Control Board.

## 2.3 WAREHOUSE AND OPERATIONS SITE SELECTION AND PREPARATIONS

### 2.3.1 GEOGRAPHICAL RECONNAISSANCE

In March 2018, prior to the establishment of the VectorLink Malawi office, a short-term technical assistance (STTA) trip by the VectorLink Zimbabwe Operations Manager supported geographical reconnaissance (GR) in Nkhhotakota District. VectorLink worked closely with NMCP Deputy Program Manager, Shadreck Mulenga, and with DHO counterparts to carry out the GR. The GR focused on the number of villages and households in each village, the transportation required to gain access to the structures in the Nkhhotakota, infrastructure (e.g., roads, numbers of health facilities), and potential operations sites locations.

### 2.3.2 OPERATIONS AND WAREHOUSE SITE SELECTION AND PREPARATIONS

In consultation with NMCP, EAD, and MOH officials, VectorLink Malawi selected warehouse and operations sites, with a particular focus on environmental safety. In identifying viable sites, factors such as land type (e.g., low lying or flood zone), soil types, proximity to boreholes and wells, as well as availability of potentially compliant IRS campaign storage facilities and the suitability of the area for constructing wash areas and soak pits were taken into account. To protect the ecosystems and reduce potential risks, the project made an effort to select sites located away from water bodies, schools, clinics, footpaths, and residences. In the three instances in which these requirements could not be fully met, the project took proactive measures to ensure safety. In Bua, a footpath crossed through the site area. The project worked with the association that owned the site to close access to the path during the campaign and empowered the security guards to prevent the general public from trespassing on the site premises. In Dwangwa, the site was located next to the Dwangwa Cane Growers Association office; thus, a fence was built around the storeroom to restrict access. The Mkaika operations site was in a low-lying area. To address this, the project used Permanent Mobile Soak Pits (PMSP) that could be removed at the end of the campaign. The project stored all insecticide for Mkaika at the neighboring operations site of Benga.

In total, 10 sites were identified: eight were used as operations sites during the spray campaign and two are being used as year-round central stores. In Boma, the project was unable to identify a single central warehouse that met Best Management Practices (BMP) guidelines for insecticide storage and that was large enough to accommodate both insecticide and IRS-related supplies. Hence, VectorLink Malawi established a central goods warehouse on the grounds of the old district hospital and a central insecticide warehouse on the grounds of the current Nkhhotakota District Hospital. The project refurbished all selected sites to ensure that they conformed to BMP standards. Four of the 10 selected sites (the two warehouses and two of the operations sites) were provided free of charge by the Nkhhotakota DHO. The remaining six operations sites are owned by community members (1) or associations (5) and were rented for the three months – the months before, during, and after the campaign.

All selected operations sites had buildings that were idle at the time of identification and required refurbishment. In general, the refurbishment of buildings involved improving ventilation, repairing or installing window glasses, screens, doors, and burglar bars, and filling cracks in the floors. Additionally, most buildings required painting to improve the lighting/visibility inside the structures. Several sites required the

clearing away of brush and the construction of toilets. At all operations sites, the project constructed wash areas and soak pits. Permanent wash areas and Fixed Soak Pits (FSPs) were built at seven of the eight operations sites, with the exception of Mkaika. As noted above, Mkaika is a relatively low-lying area and thus can flood during the rainy season. With this in mind, the project opted to use PMSPs in Mkaika. To accommodate the 53 SOPs based at the Mkaika site, four PMSPs were constructed in each of the two temporary wash areas built at the site.

The table in Annex A summarizes the refurbishment carried out at each of the 10 sites. Given the project's investment in refurbishing the sites, it asked landlords to agree that the sites will be used each year for the life of the project.

## **2.4 LOGISTICS NEEDS ASSESSMENT AND PROCUREMENT**

VectorLink Malawi conducted logistics needs assessments in May–June 2018 to determine the following:

- Materials, consumables, and equipment needs
- Transportation requirements, including hiring vehicles for spray operations and supervision
- Estimates of personal protective equipment (PPE) and spray equipment required
- Appropriate supply and equipment mobilization and distribution plans

See Annex B for the details on international and local procurement as well as material distribution plans.

## **2.5 NATIONAL AND DISTRICT PLANNING MEETINGS**

Following the selection of the operations sites in Nkhotakota District, VectorLink Malawi intensified collaboration and coordination with stakeholders. VectorLink Malawi, in collaboration with PMI and the NMCP, facilitated a National IRS Planning Meeting on July 26, 2018. The objective of the meeting was to discuss with all stakeholders activities planned before, during, and after IRS operations and to clarify the role of each stakeholder. In total, 15 participants (9 men and 6 women) attended the planning meeting.

In addition, VectorLink Malawi organized a one-day micro-planning meeting on August 13, 2018, with all stakeholders in Nkhotakota District to discuss and comment on the draft IRS operational plan and to agree on the roles and responsibilities of each of the partners. The issues discussed during the micro-planning meeting included: recruitment of seasonal workers, including an emphasis on hiring women; community mobilization; the role of stakeholders in supervision of activities during the IRS operations; and participation in, and leading of weekly meetings at the district and operations site levels respectively. In total, 44 participants (32 men and 12 women) attended the micro-planning meeting.

## **2.6 HUMAN RESOURCES REQUIREMENTS**

### **2.6.1 RECRUITMENT**

VectorLink Malawi developed recruitment criteria for all seasonal worker positions needed to implement the October 2018 spray campaign in Nkhotakota District. It met with the NMCP and PMI to discuss and approve the recruitment criteria for all seasonal workers. After approval from the NMCP and PMI, VectorLink Malawi met with the Nkhotakota DHO, discussed the plans for the recruitment process, and shared all the recruitment adverts and timelines.

VectorLink Malawi posted the adverts in strategic locations, such as health centers in each operations site area. All adverts carried a note encouraging all qualified female candidates to apply. Additionally, radio adverts were run on Nkhotakota District radio to inform listeners of the job opportunities with the IRS campaign. These adverts also encouraged qualified women to apply. Over 3,911 candidates applied for the 634 seasonal worker positions available with the project.

Interviewing seasonal workers was conducted in close collaboration with the NMCP, and the Nkhosakota DHO and District Council. Prior to the interviews, representatives from VectorLink Malawi and the three government entities met to review the interview questions and discuss selection criteria. The VectorLink Malawi team shortlisted candidates based on those criteria and then shared the shortlisted candidates with the DHO prior to interviews.

After the interviews, candidates who passed the interviews and written tests were shared with the NMCP, DHO, and District Council for review and approval. In the event a female candidate had equal merit to a male candidate, priority was given to the woman.

Government entities at the district level were somewhat resistant to VectorLink Malawi shortlisting candidates based on the selection criteria. In previous IRS campaigns, local government representatives had had a significant role in shortlisting candidates. However, VectorLink Malawi received significant feedback that candidates appreciated the transparency and fairness of its recruitment process. Additionally, the project credits its recruitment approach with facilitating the hiring of female seasonal workers – 40 percent of the seasonal workers in 2018 were women. With this in mind, VectorLink Malawi will continue to engage the NMCP, DHO, District Council, and other key stakeholders during the recruitment process of seasonal workers. However, it also will continue to shortlist candidates to ensure a transparent and merit-based selection of workers.

Before training, all SOPs, washers, storekeepers, spray supervisors, site managers, and team leaders (TLs) had a medical examination in their respective health centers to ensure they were medically and physically fit to perform IRS activities.

The health centers screened all women for pregnancy. Three women, one each in the operations sites of Benga, Boma, and Lupachi, were found to be pregnant. VectorLink Malawi assigned them to mobilizer positions, which would not expose them to insecticide.

## **2.6.2 HIRED SEASONAL STAFF**

VectorLink Malawi recruited and hired 634 seasonal workers to carry out and support IRS operations in Nkhosakota District.<sup>1</sup> The staff that implemented IRS in the operations sites included 396 SOPs, 80 team leaders, 40 spray supervisors, and 8 site managers. Other seasonal support staff comprised 18 data clerks, 8 M&E assistants, 11 storekeepers, 1 logistics assistant, 8 pump technicians, and 6 finance assistants. Forty-one washers and 17 security guards provided IRS support at the operations site level.

Of these 634 seasonal staff, 40 percent (n=256) were women. Of the 476 people hired as SOPs and team leaders, 40 percent and 39 percent, respectively, were women.

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<sup>1</sup> An additional 323 people (8 IEC assistants and 315 mobilizers) supported IRS mobilization. VectorLink Malawi did not hire these people since over 94 percent of them were government employees whom the DHO assigned to the activity. The DHO instructed the project not to “hire” them via a work contract. Thus, all mobilization personnel were provided the approved Daily Subsistence Allowance (DSA) for lunch on the days worked.

Table 2 lists the IRS seasonal support staff, by position and by gender.

**TABLE 2: SEASONAL IRS STAFF HIRED**

Staff Position	Total		Total	% Females Hired
	Male	Female		
Data Entry Clerks (DECs)	13	5	18	28%
M&E assistants	4	4	8	50%
Storekeepers	6	5	11	45%
Logistics assistant	1	0	1	0%
Finance assistants	4	2	6	33%
Site managers	6	2	8	25%
Spray supervisors	29	11	40	28%
SOPs	239	157	396	40%
Team leaders	49	31	80	39%
Security guards	13	4	17	24%
Washers	7	34	41	83%
Pump technicians	7	1	8	13%
Total	378	256	634	40%

### 2.6.3 IRS TRAINING

VectorLink Malawi reviewed the standard training curriculum for all VectorLink countries and customized it to the Malawi context.

Across all cadres, a total of 1,114 people were trained to support IRS. See Table 3 for a timeline and brief description of each training. See Table 4 for a complete list of people trained to support IRS.

**TABLE 3: BRIEF DESCRIPTION OF TRAININGS**

Type of Training	Dates	Length (days)	Brief Description
IEC Training of Trainers (TOT)	September 3–4, 2018	2	Topics covered included: IEC messages on IRS, addressing myths and misconceptions surrounding IRS, and promoting acceptance of IRS, structure identification, mobilization data collection, training techniques for mobilizer training, planning, coordinating, and supervising IEC activities for IRS. The training comprised both theory and practical sessions, including role playing on IRS mobilization, completing data collection and supervision tools, and developing and updating a site’s community mobilization plan in conjunction with the site’s spray calendar.
Mobilizer Training	September 3–4, 2018	2	Key topics covered included: IRS overview, roles of mobilizers, promoting acceptance of IRS, key IRS messages, supporting the work of SOPs (complementary roles), preparing the community for spray, data collection, and structure marking.
Health Worker/ Poison Control Training	September 3, 2018	1	VectorLink Malawi, jointly with Nkhosakota DHO, organized and conducted a training on insecticide poisoning and management for medical officers from all 21 health facilities across the district.
Master Trainer Workshop	September 10–14, 2018	5	The main objective of the workshop was to equip IRS master trainers with the knowledge and skills they would need to prepare seasonal workers to effectively implement all aspects of IRS, to achieve campaign objectives.
Logistics and Store Management	September 5–6, 2018	2	Operations Site storekeepers and the logistics assistant were trained on: individual roles and responsibilities in IRS logistics, warehouse and commodity management, store management and recordkeeping, IRS water management for cleaning PPE and progressive rinsing, soak pit management, environmental compliance, and understanding and preparing for post-IRS activities.
Finance Assistants Training	September 10–11, 2018	2	VectorLink Malawi finance and administration manager and accountant provided the finance assistants an overview of project financial management and briefed on them on their responsibilities to ensure efficient and effective management of timecards, fuel, and funds.
M&E and Data Entry Training for Data Entry Clerks and M&E Assistants	September 12–14, 2018	3 days for data entry training and 1 additional day for M&E Assistant Training	The training oriented DECAs and M&E assistants to the DHIS2 database platform for data entry, and cleaning. Additionally, M&E assistants were trained on field-level data flow, checking data quality, and using the Data Collection Verification (DCV) form.

Type of Training	Dates	Length (days)	Brief Description
Spray Operations TOT for Supervisors, Site Managers	September 17–21, 2018	5	The main objective of the ToT was to enable participants to effectively explain and demonstrate current IRS best practices to SOPs, storekeepers, community mobilizers, and other seasonal workers. The ToT emphasized familiarizing participants with the sprayer and PPE, the steps of mixing Actellic 300CS, the use of the Control Flow Valves (CFVs), spraying techniques, a field simulation for spraying, data collection, house marking, environmental compliance, community mobilization, gender inclusiveness, and supervision. A session on mobile phone supervision highlighted mobile health (mHealth) functions, such as daily reporting via the Performance Management Tracking (PMT) system and mobile supervisory checklists.
Training for SOPs and TLs	September 24–29, 2018	6 (5 for SOP and 1 for TL training)	SOP training topics included: spray techniques and use of CFVs, handling and managing insecticides, including steps of insecticide mixing, handling and maintaining sprayers, personal and environmental safety, field simulation (“live fire”) training, data collection, house marking, gender/freedom from harassment and the basics of IEC for IRS.  The team leader trainings covered: spray team leader responsibilities, giving and receiving constructive feedback, using the DOS checklist in supervising the spray quality, TI data collection and reporting.
Environmental Compliance	September 24–29, 2018	1	Environmental officers from the DHO and District Council were trained on environmental compliance monitoring, waste management, emergency response, and protocols for transportation for IRS.
Washer and Pump Technician Training	October 1, 2018	1	The washers received instructions on the use of PPE, washing insecticide-contaminated PPE, soak pit maintenance, effluent waste disposal, and the effects of insecticide on humans and the environment. The pump technicians were provided training on spray pump maintenance and troubleshooting issues.
Emergency Situation/ Security Training	October 1, 2018	1	Orientation was provided on fire safety and general security protocols for IRS stores, as well as guidance on how to handle emergency situations.
Contract Drivers Training	October 1, 2018	1	Drivers received orientation on safety procedures while transporting insecticides, and on the use of first aid kits. They also were trained on what to do while transporting SOPs to and from the field, and in case an accident occurred leading to an insecticide spill.

**TABLE 4: PEOPLE TRAINED TO SUPPORT IRS**

Categories of Persons Trained	Training on IRS Delivery												Other Trainings												Total		
	Master Training Workshop		Training of Trainers		Spraying Operations		Data Capture		Logistics Training		Technical Maintenance		Mobilization		Poison Control		Environmental Compliance		Washing		Security		Finance			Transportation Safety	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F
Gov't counterparts (DHO staff, District Council, NMCP)	15	0																									15
Site managers			6	2																							8
Spray supervisors			30	11																							41
SOPs					272	174																					446
Team leaders					49	31																					80
Data entry clerks							17	6																			23
M&E assistants							6	4																			10
Logistician									1	0																	1
Storekeepers									6	5																	11
Finance assistants																							4	2			6

Categories of Persons Trained	Training on IRS Delivery												Other Trainings												Total		
	Master Training Workshop		Training of Trainers		Spraying Operations		Data Capture		Logistics Training		Technical Maintenance		Mobilization		Poison Control		Environmental Compliance		Washing		Security		Finance			Transportation Safety	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		M	F
Pump technicians										7	1																8
District health promotion officer													1														1
IEC assistants													7	1													8
Mobilizers													185	130													315
Adverse effects teams (Clinicians)															15	8											23
Environmental officers																	10	2									12
Washers																			7	34							41
Security guards																					13	4					17
Drivers																									48	0	48
TOTAL M/F	15	0	36	13	321	205	23	10	7	5	7	1	193	131	15	8	10	2	7	34	13	4	4	2	48	0	1114
TOTAL/Training	15		49		526		33		12		8		324		23		12		41		17		6		48		1114

# 3 INFORMATION, EDUCATION AND COMMUNICATION

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VectorLink Malawi, the NMCP, the Nkhotakota DHO, USAID implementing partners, and the Organized Network of Services for Everyone’s Health (ONSE) and Health Communication for Life (HC4L) projects all worked together in planning and implementing IRS IEC and mobilization activities.

In consultation with the NMCP and Nkhotakota DHO, VectorLink Malawi engaged MOH HSAs as IEC assistants and mobilizers. The project also collaborated with the NMCP and Nkhotakota DHO in training the IEC assistants and mobilizers to use diverse and effective approaches and channels of communication to sensitize and mobilize communities. Community mobilization activities were done in two phases: house-to-house mobilization on September 12–October 6, 2018,<sup>2</sup> prior to spray, and mobilization concurrent with spraying from October 2–November 7, 2018. Each operations site had an IEC assistant who coordinated all IEC activities under the guidance of the VectorLink IEC coordinator. IEC assistants and mobilizers were instrumental in linking spray operation teams to targeted communities.

The VectorLink Malawi IEC coordinator, in collaboration with NMCP and DHO counterparts, including the DHPO and DEHO, were in charge of supervising and coordinating mobilization and other IEC activities at the district level. The supervision team ensured that the mobilizers mobilized households in all eligible structures and informed homeowners about the date of spraying at least a day in advance, and that the data collected by mobilizers were accurate.

## 3.1 DOOR-TO-DOOR MOBILIZATION

VectorLink Malawi conducted door-to-door mobilization on September 12–29, 2018, in Boma, Dwangwa, Dwambazi, and Lupachi operations sites and on September 12–October 6, 2018, in Mwansambo, Mkaika, Benga, and Bua operations sites. During this exercise, mobilizers communicated key IRS messages along with the expected spray dates to homeowners. They also distributed IRS structure cards for each eligible structure and IRS educational leaflets meant to complement the information mobilizers shared (see photo). Additionally, mobilizers collected data using the IEC Mobilizer form, filled and issued an IRS card and marked the outside of each home with the IRS structure number from the IRS card issued, their mobilizer number, the date of mobilization, and mobilization status – M for mobilized, NM for not mobilized.

**FIGURE 2: IEC MOBILIZER EXPLAINS IRS TO A HOUSEHOLD OWNER**



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<sup>2</sup> In order to complete house-to-house mobilization, it was extended into the first week of spray in areas that were scheduled to be sprayed later in the campaign.

IRS messages for the 2018 spray campaign emphasized adherence to safety guidelines and addressed fears, concerns, and misconceptions that lingered in the communities from the spraying in 2012. The messages also highlighted the importance of using insecticide-treated bed nets (ITNs) along with IRS.

VectorLink Malawi mobilized households in 109,209 structures, with household respondents reporting a 99.9 percent IRS acceptance rate. Table 5 contains results of house-to-house mobilization efforts. IEC assistants, with support from the M&E assistants, oversaw the implementation of this activity. They also reviewed the data collected and IRS cards issued to the structures to ensure accuracy and completeness.

**TABLE 5: RESULTS OF IRS MOBILIZATION\***

Traditional Authority	Structures		Population Reached			IRS		IEC/BCC Materials Distributed
	Sensitized	Not Sensitized	Total	Males	Females	Acceptance	Non-Acceptance	
Kafuzira	6,639	59	15,727	7,292	8,435	6,637	2	3,509
Kanyenda	34,442	61	69,042	30,353	38,689	34,421	19	8,589
Malengachanzi	24,648	149	60,655	27,195	33,460	24,631	16	5,873
Mphonde	6,641	43	13,830	57,95	8,035	6,629	3	1,845
Mwadzama	26,619	92	60,941	27,189	33,752	26,580	7	10,144
Mwansambo	10,220	32	17,862	8,301	9,561	10,216	4	4,134
Total	109,209	436	238,057	106,125	131,932	109,113	52	34,094

\*2018 mobilization results are based on the aggregated totals entered on each IEC Mobilizer Form, rather than structure-level detailed data entry. This was due to challenges experienced with mobilization data entry. Delays in mobilization form collection/submission, village name discrepancies, challenges with data cleaning, and issues with network data syncing at the data centers made it impossible to fully clean the detailed mobilization data.

### 3.2 MOBILIZATION CONCURRENT WITH SPRAY

A day before spray in each village, mobilizers collaborated with village chiefs to make announcements and to sensitize homeowners about the spray scheduled for their villages. This “last-minute” notice was to ensure homeowners or their designate would properly prepare their homes for the spraying and would be available to meet the spray team.

**FIGURE 3: HOUSEHOLD OWNERS PREPARE FOR IRS**



On the actual day of spraying, IEC assistants and mobilizers were key in linking spray operations teams to targeted communities. Mobilizers helped household owners prepare their structures for spraying, and they encouraged still-doubtful owners to accept IRS and be ready for the spray. Once the spray team arrived, they directed the SOPs to the mobilized structures. The mobilizers also noted structures that had not been sprayed on the planned day, and coordinated with SOPs to spray them the following day or during the final mop-up.

## 3.3 OTHER IEC ACTIVITIES

### 3.3.1 IRS LAUNCH

VectorLink Malawi, in collaboration with NMCP and the Nkhotakota DHO, organized an IRS launch on October 1, 2018, in the Boma operations site. A task force comprising the VectorLink IEC coordinator and nine members from the NMCP, DHO, and District Council was formed to oversee the planning and implementation of the launch. To inform communities about the launch, invitational messages were aired on the Nkhotakota community radio station for one week prior to the launch. A publicity van and band also went around the district to inform people about the launch. The launch kicked off with a march from the DHO to Kampala Ground, the local football pitch that is used as a gathering space in Boma. Participants enjoyed traditional dance performances, dramas, and speeches on the importance of IRS and on PMI and VectorLink's commitment to collaborating with the government on IRS implementation. Attendees were able to view the spraying of the chief's house, which was located nearby. Among the participants were officials from PMI, VectorLink, the NMCP, the national MOH, the DHO, the District Council, ward councilors, traditional leaders, other district development partners, and community members. The Guest of Honor was Mr. Beston Chisamile, MOH Chief Director of Administration. Additionally, Dr. Storn Kabuluzi, Director of Preventive Health Services, was in attendance.

**FIGURE 4: SOPS MARCHING AND CHIEF OF PARTY THANKING ATTENDEES AT LAUNCH CEREMONY IN NKHOTAKOTA DISTRICT**



### 3.3.2 COMMUNITY LEADERSHIP ENGAGEMENT IN COMMUNITY MOBILIZATION AND SPRAY ACTIVITIES

VectorLink Malawi in collaboration with the Nkhotakota DHO and District Assembly organized nine meetings with local leaders. Local leaders serve as gatekeepers to communities. The aim of the meetings was to ensure smooth implementation of IRS activities by informing and educating the leaders about IRS and to ask for their support with community mobilization and promoting community acceptance. The meetings were held with each of the nine Area Development Committees (ADCs) between September 10–12, 2018. A total of 270 people attended these ADC meetings.

### 3.3.3 MASS MEDIA COMMUNICATION

VectorLink Malawi used a variety of media to explain and encourage acceptance of IRS (see Table 6). Radio spots, jingles, and interactive radio talk shows were broadcast on Nkhotakota community radio to inform and engage beneficiaries regarding IRS. The radio spots aired five times a day from September 24 to November 5, 2018. They emphasized key messages on the benefits of IRS and the role of the community before, during, and after spray, and highlighted that the intervention was funded by USAID/PMI. Additionally, to increase awareness of the spray schedule, nightly radio messages reminded listeners about which villages were targeted for spray the next day.

Interactive radio talk shows were held every Thursday evening. Beneficiaries were invited to share their concerns and ask questions by calling in or sending text messages. The weekly talk shows featured rotating government partners such as the district health officer, DEHO, various AEHOs, and the members of the District Council.

IRS mass media communication efforts also included the production and mounting of large IRS signage, such as an IRS launch banner, a road banner, two central warehouse banners, and banners and metal sign boards for each operational site. The slogan for the campaign was “TIYENI TIGWIRANE MANJA POGONJETSJA MALUNGO!” meaning “Let’s join hands in the fight against malaria!” Other IEC materials that were produced and distributed were leaflets, fliers, and posters. Posters were pasted in strategic places such as shops, markets, and health centers to inform communities about the benefits of IRS and the roles of homeowners.

**FIGURE 5: METAL SIGN AND BANNER AT DWAMBAZI OPERATIONS SITE**



**TABLE 6: MASS MEDIA COMMUNICATION ACTIVITIES**

Dates	Type of IEC Activity/Material	Frequency/Number		
		Subject	Frequency	Total # Aired
September 24 – November 5, 2018	Radio spots aired five times daily and jingles aired three time daily (concurrently with spot on IRS misconceptions and concerns) on Nkhotakota community radio station	IRS benefits and the roles of beneficiaries before, during, and after spray	Two times a day	86
		IRS misconceptions and concerns	Three times a day	129
		Jingle on home preparation	Three times a day	129
October 4 – November 1, 2018	Radio talk shows	Once every week; aired five times		
September 25 – October 1, 2018	IRS launch banner and road banner	One launch banner and one road banner placed over the main intersection in Boma		
October 2 – November 7, 2018	Operations site and central warehouse banners	Eight operations site banners Two central warehouse banners		
October 2 – November 7, 2018	Metal sign boards for the operations sites	Eight metal sign boards for each operations site		
September 19 – November 5, 2018	Leaflets, fliers, and posters	200 posters, 75,000 leaflets, 100 fliers		

### 3.3.4 COLLABORATION WITH PARTNERS

Pakachere Institute for Health Development and Communication is a local NGO sub-contracted by the ONSE project to implement malaria prevention interventions in Nkhotakota District. The organization receives technical support from HC4L to implement malaria-related BCC activities. During the spray campaign, from October 7 to November 7, 2018, Pakachere Institute conducted 30 meetings in the Traditional Authorities of Malengachanzi and Mphonde. In these meetings, Pakachere sensitized communities on malaria prevention, encouraging the use of ITNs and acceptance of IRS.

There were issues with the consistency of messaging that Pakachere gave residents. One Pakachere community liaison mistakenly told residents that one bottle of insecticide should be used per house. This misinformation spread through the community and had to be addressed by VectorLink radio messaging and interpersonal communication.

Despite such challenges with this collaboration, VectorLink aims to work more widely with community-based organizations in Year 2. To ensure that messaging is consistent, these organizations will be integrated into IRS mobilization trainings. Additionally, VectorLink will work with ONSE and HC4L to develop a comprehensive package of messages that include the use of ITNs.

# 4 IMPLEMENTATION OF IRS ACTIVITIES

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The 2018 IRS campaign was the first IRS campaign implemented by the PMI VectorLink Project in Malawi. Initially, the campaign was scheduled to take place over 30 workdays from October 2 through November 5, 2018. To ensure sufficient coverage, two days were added to the campaign – one day was added to Mwanambo operations site and two days were added to Bua operations site. The VectorLink Malawi team conducted the campaign on October 2–November 5 in Benga, Mkaika, Boma, Dwangwa, and Dwambazi operational sites, on October 2–17 in Lupachi operational site, on October 2–November 6 in Mwanambo, and on October 2–November 7 in Bua.

Spray operations ran six days per week, Monday through Saturday. VectorLink Malawi structured the spray calendar so that spray teams sprayed remote and hard-to-reach villages at the start of the campaign, to ensure those communities were reached in case rain cut them off later. Spray calendars were adjusted to accommodate progressive mop-up so that villages that were unable to be fully sprayed, or had refusals or locked structures, could be revisited immediately after the scheduled spray day.

Daily spray activities at each operational site began with staff reporting at 5:30 am. Site managers aimed for departure to the field between 6:00 and 6:30 am. Before departure, site managers together with AEHOs and other supervisors, held morning assemblies. These assemblies were used to communicate important announcements, feedback from field supervision and data review, and expectations for the day. Additionally, they were used to check the health of all spray team members to ensure that they were healthy enough to carry out the day's activities. Team leaders filled out daily health check forms for each SOP. After the SOPs retrieved the leftover insecticides from barrels 1, 3, and 5, they departed to the communities for the spray work.

In the field, spray supervisors and team leaders supervised the allocation of SOPs to structures designated for spraying that day. Team leaders completed the DOS checklist while supervisors used the Homeowner Preparation and SOP Performance forms for supervision. SOPs recorded data using the Daily Spray Operator data collection form.

At the end of the day, team leaders verified the data on forms submitted in the Daily Spray Operator form: they checked the forms for completeness, accuracy of arithmetic, and so forth, and corrected any errors found. They summarized all SOP data and submitted them to spray supervisors. The supervisors further verified the data and submitted them to the site managers. The site managers used the summarized data to complete the Performance Tracking Sheet that was posted on a wall at each operational site. Lastly, site managers handed over all spray data forms to M&E assistants, who further reviewed the data, investigated any issues, and delivered the forms to the data center for entry.

## 4.1 IRS SUPERVISION

Staff from VectorLink Malawi, PMI, and the NMCP, Nkhotakota DHO, and District Council collaborated to supervise IRS. Table 7 shows the institutions/stakeholders that participated in IRS supervision.

**TABLE 7: INSTITUTIONS/STAKEHOLDERS THAT PARTICIPATED IN IRS SUPERVISION**

Level	Institution/Position	Responsibilities
National level	NMCP, EAD, USAID/PMI, VectorLink Malawi	Overall supervision for IRS activities
District level	DHO: District Health Officer, DEHO, AEHOs District Council: M&E Officer, Forest Officer, Environmental Officer	Close supervision at each operational sites
Other support	VectorLink Malawi staff, VectorLink home office and South-to-South STTA visitors	Overall supervision for IRS activities

To ensure supervision of the IRS campaign at all levels, the following structure was used:

- SOPs were divided into teams of five, with one team leader supervising each team.
- A spray supervisor supervised two teams. Spray supervisors reported directly to the site manager, who in turn reported to the district coordinator.
- In each operational site, a full-time VectorLink Malawi staff member helped coordinate routine daily supervision, by working closely with all supervisors from VectorLink Malawi and other stakeholders.
- The Nkhotakota DHO appointed an AEHO to each operations site to provide leadership and coordination of all spray activities on a daily basis.
- VectorLink Malawi implemented a supervision plan to ensure coordination of supervision and clear communication and follow-up so that corrective measures were immediately implemented for any identified issues. VectorLink staff in the field met nightly during the campaign to share experiences and issues, and develop recommendations for campaign-wide implementation.
- mHealth supervision checklists were used to assess the daily performance of SOPs and team leaders, as well as adherence to environmental compliance requirements and data collection protocols. This promoted real-time tracking and monitoring of issues observed by supervisors during spray operations.
- All operational sites used the Performance Tracking Sheet on a daily basis. At the end of each day, site managers submitted summary data from the Performance Tracking Sheet to the district coordinator. The district coordinator compiled the data from the site sheets, updated the district Performance Tracking Sheet, and submitted a daily report to all VectorLink operations staff, as well as Nkhotakota government partners and the PMI activity manager. This daily report presented the district's performance on key indicators for that day and all previous operations days.
- VectorLink Malawi used site visitor books to record supervisory feedback. Every supervisor who visited the operational site noted their observations and recommendations in the book. The next supervisor would then follow up on the observations and recommendations made by the previous supervisor. Through this practice, performance improved because issues were addressed for specific operational sites and not just generally.
- Supervisors held regular meetings at the operational sites to review campaign progress and discuss issues and recommendations for improving performance.
- VectorLink Malawi staff and government supervisors, both at the NMCP and DHO level, met weekly to share observations, discuss challenges, and develop recommendations to be immediately implemented at all sites. Additionally, on a daily basis, important issues were shared on a joint WhatsApp group so that VectorLink and government staff could act on them quickly across all operational sites.

VectorLink Malawi received further supervision support from:

- VectorLink Ghana Environmental Compliance Officer (ECO) Abukari Yakubu whose STTA took place

during SOP and team leader training and the first week of spray.

- Home Office VectorLink M&E Specialist Jillian Berkowitz, who came to oversee the implementation of the DHIS2 database and support M&E activities.
- The VectorLink Project Director, Brad Lucas, who came to provide STTA.
- Visitors from PMI Washington and PMI Malawi – Kristen George, Lilia Gerberg, Pius Masache and Xiomara Brown – who came to supervise spray operations.

During their visits, the above staff inspected operational sites and supervised spray operations. At each operational site visited, they inspected wash areas, soak pits, and storerooms to ensure they complied with BMPs, and they checked stock, reviewing records and carrying out physical counts, particularly of insecticide stock. In addition, they supervised IRS in the field to observe spray techniques, compliance with IRS protocols, and the supervision provided by the site spray supervisors and team leaders. During their supervision, they provided feedback for improving mobilization, house preparation, the quality of spray technique, and data collection. More details are available in their respective trip reports.

During spray operations, VectorLink Malawi used the DOS checklist to ensure that all SOPs in the field were adhering to high-quality standards for spraying, and to standardize spray quality supervision by team leaders and other supervisors. The DOS checklist provided guidelines for supervising insecticide mixing and triple rinsing of insecticide bottles, proper PPE use, CFV use during spraying, household preparation, and spray technique. Team leaders used the DOS form to supervise each SOP on their team at least once per day. In total, team leaders conducted a total of 9,003 DOS inspections over the spray campaign period. Of these, 98.4 percent (n=8,858) did not raise any red flags. Team leaders corrected any mistakes, noted on the form as red flags, in real time. Issues observed during DOS inspections were discussed every day at morning assemblies. The number of red flags observed was lower than expected; VectorLink feels this is due to supervisors providing corrective feedback but not documenting the issue as a red flag on the DOS form.

## 4.2 MHEALTH

VectorLink Malawi partnered with Dimagi LLC to use the CommCare mobile health (mHealth) system in the 2018 campaign. The system facilitated supportive supervision and data verification at the household level through: the mobile supervisory forms and submission of daily high-level spray data by site via the PMT, and daily text message job aids that reminded seasonal workers of regulations and operational procedures. The use of mHealth for reporting and supervision streamlined the feedback process, enabling timely reporting of spray progress and issues, and the immediate rectification of issues.

The mHealth reporting tools for data collection and verification, which the project used throughout the campaign, included:

**Performance Management Tracker:** During spray operations, all site managers at the end of each day sent daily reports on four operational indicators to the gateway phone. The gateway phone then sent the data to the Telerivet system for processing and storage. The indicators included the total number of SOPs who worked, structures found by the SOPs, structures sprayed by the SOPs, and insecticide bottles used.

**Supervisory Application:** Site managers and supervisors used checklists on the mobile phones daily to supervise spray operations, including environmental compliance. At the end of each day, supervisors submitted completed supervisory forms to the CommCare system. The CommCare system then sent the submitted reports to both the country-level staff and home office staff. The reports informed VectorLink Malawi in real time of the challenges encountered in the field. The reports helped the project to address gaps noted during supervision and flag issues for immediate action.

**Job Aid Messages:** All seasonal workers and district supervisors received different daily job aid messages on spray operations, as well as gender and sexual harassment issues. These messages regularly reminded the seasonal staff of important IRS issues, which in turn led to increased awareness of safety, and better spray quality and data collection. See Annex C for job aid messages sent to seasonal staff.

Data Collection Verification: The M&E assistants used the DCV tool to collect structure-level information on the spray status of randomly sampled structures. This information was cross-referenced with DHIS2 database coverage for the same geographical location to highlight issues with over-reporting of spray coverage.

### 4.3 LOGISTICS AND STOCK MANAGEMENT

VectorLink Malawi trained 11 storekeepers and one logistics assistant to manage the operations site stores and central warehouses. They updated and maintained inventory records (stock cards, ledger books, and insecticide tracking forms) and managed the requests for and fulfillment of IRS supplies. Supervisors regularly checked stock records and conducted physical stock counts, with a focus on insecticides, to ensure uniformity between delivery notes, stock cards, insecticide tracking forms, ledger books, and physical stock counts.

The VectorLink Malawi logistics coordinator provided regular inventory updates for each operational site store. Site storekeepers were responsible for requesting needed supplies from the warehouse manager who was responsible for filling orders. To properly track the movement of materials, delivered goods were accompanied with signed copies of request and delivery notes.

Storekeepers used insecticide tracking forms to track quantities of insecticides that team leaders received and returned daily at each operational site. At the close of each spray day, storekeepers totaled all empty bottles and all returned full bottles from the field, and entered the returned stock on respective stock cards. The VectorLink Malawi logistics team worked closely with the M&E team to ensure that records of used insecticides on stock cards corresponded to insecticide data reported in the project database.

#### 4.3.1 IRS VEHICLES

VectorLink Malawi contracted 41 vehicles (39 minibuses and two jeeps for Lupachi) to support IRS operations at the eight operations sites. It also contracted eight vehicles to transport supervisors. Table 8 shows the number of vehicles assigned to each operations site.

**TABLE 8: DISTRIBUTION OF VEHICLES IN THE OPERATIONS SITES**

Operations Site	Vehicles for SOP Transport	Vehicles for Supervision	Total
Benga	4	1	5
Boma	10	1	11
Bua	4	1	5
Dwambazi	4	1	5
Dwangwa	9	1	10
Lupachi	2	1	3
Mkaika	5	1	6
Mwansambo	3	1	4
Total	41	8	49

### 4.4 VECTORLINK PAYMENT OF SEASONAL WORKERS

VectorLink Malawi paid all seasonal staff, including IRS government support staff (i.e., IEC assistants and mobilizers), via Airtel Mobile Money transfer. Electronic mobile payment provided a safe and secure way for the project to transmit over 200 million Malawian kwacha to temporary seasonal workers. In order to process mobile payments, VectorLink Malawi established a contract agreement with Airtel Malawi Ltd. prior to the spray campaign. Through the seasonal worker contracts, VectorLink established payment cycles that coincided to roughly every two weeks after the start of mobilization. Money was “blasted” by Airtel to the phone numbers provided by the IRS government support staff and the seasonal workers. After each payment, a system report was generated by Airtel as proof of payment; it also showed unsuccessful transmissions that required a repayment to be sent.

# 5 ENTOMOLOGY

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VectorLink Malawi subcontracted MAC to implement entomological monitoring activities. To support these activities, VectorLink Malawi hired a technical manager who is based at MAC in Blantyre and works closely with MAC's principal investigator. MAC's contract with the AIRS project was extended to June 30, 2018. Its Year 1 contract with VectorLink Malawi covers the 12-month period July 1, 2018– June 30, 2019. In addition to working with MAC on entomological monitoring, VectorLink Malawi is working with the Malaria Consortium and other partners to support the NMCP in developing a country-specific IRM Plan. It is also working to strengthen the VCTWG.

## 5.1 WALL BIOASSAYS

VectorLink Malawi in collaboration with MAC conducted cone bioassays in 48 sprayed structures selected from eight villages in Nkhotakota District. Six structures with different wall surfaces were randomly selected at each site to conduct spray quality assessment; burned brick (2), cement plaster (2), and mud (2). The samples were tested within one week of the spraying (T0) to assess spray quality. One month post spraying (T1), 12 sprayed structures from two sites were sampled to monitor the decay rate of the sprayed insecticide; these structures will remain as the samples for subsequent residual efficacy tests. Three test cones and one control cone were used. The test cones were placed at 3 different heights (top – 1.5 m; middle – 1.0 m and bottom – 0.5 m) on sprayed wall surfaces while the control cones were fixed on unsprayed surfaces such as kitchens and bathrooms built separately from the sleeping structures. Ten non-blood fed female *Anopheles gambiae* s.s. (Kisumu strain) mosquitoes aged between 2-5 days were introduced in each of the cones. The mosquitoes were exposed to the walls for 30 minutes. After 30 minutes, the mosquitoes were transferred to insecticide-free holding paper cups. Knockdown was observed and recorded at 30 and 60 minutes respectively, and mortality was recorded after 24 hours. Test mortality was corrected using Abbott's formula when control mortality was between 5% and 20%.

Table 9 presents data on wall bioassays conducted to assess the quality and decay rate of Actellic 300CS. The mortality rate after 24 hours was very low in houses at some sites that were sprayed during the first week. This was likely due to poor spray quality. After a week of spray, the spray teams from Nkhotakota Boma catchment area were retrained and the spray quality improved. Data on vector bionomics is also being collected and insecticide susceptibility tests will be conducted at the peak of rainy season (February – March 2019). A separate entomology report covering all other components will be submitted.

## 5.2 INSECTICIDE RESISTANT MANAGEMENT PLAN

PMI VectorLink Malawi, in collaboration with Malaria Consortium, provided technical assistance to the NMCP to develop an IRM plan for Malawi. In July 2018, Dr. Tarekegn Abeku, Malaria Consortium Senior Technical Specialist, traveled to Malawi. Dr. Abeku presented at the National Vector Control Technical Committee meeting, introducing, discussing, and gathering feedback on the IRM plan work plan. Malaria Consortium has worked with a consultant to develop a draft situation analysis report based in documentation reviews. Additionally, a GIS specialist has been hired to develop interactive maps to guide in the development of the IRM plan. The IRM plan has been outlined in detail and a draft of the IRM plan is due in January 2019. By February, Malaria Consortium plans to present the IRM plan for feedback at a national workshop in Lilongwe. The final plan will be submitted in March 2019.

**TABLE 9: RESULTS OF CONE BIOASSAYS CONDUCTED TO ASSESS QUALITY AND DECAY RATE OF ACTELIC 300CS**

Insecticide Sprayed	Operations Site	Test Site	Spray Date	Wall Type	Mosquito Origin	24-hour Mortality Rate % (n)	
						T0	T1
Actellic 300CS (Pirimiphos-methyl)	Boma	Khufi 1	Oct 2, 2018	Cement plaster	Kisumu	47.0 (62)	-
				Burned brick	Kisumu	64.0 (61)	-
				Mud	Kisumu	90.0 (61)	-
	Bua	Chembakuka	Oct 3, 2018	Cement plaster	Kisumu	100.0 (64)	92.0 (68)
				Burned brick	Kisumu	100.0 (54)	100.0 (70)
				Mud	Kisumu	95.0 (52)	100.0 (74)
	Mwansambo	Chikango	Oct 4, 2018	Cement plaster	Kisumu	97.0 (60)	-
				Burned brick	Kisumu	100.0 (58)	-
				Mud	Kisumu	100.0 (60)	-
	Dwangwa	Chimphewa	Oct 3, 2018	Cement plaster	Kisumu	100.0 (78)	69.5 (82)
				Burned brick	Kisumu	100.0 (61)	67.5 (60)
				Mud	Kisumu	100.0 (59)	100.0 (80)
	Boma	Kalusa II	Oct 11, 2018	Cement plaster	Kisumu	100 (32)	-
				Burned brick	Kisumu	95 (37)	-
				Mud	Kisumu	100 (31)	-
	Boma	Chafukira	Oct 12, 2018	Cement plaster	Kisumu	100 (37)	-
				Burned brick	Kisumu	100 (33)	-
				Mud	Kisumu	72 (36)	-
	Boma	Mtanga 1	Oct 15, 2018	Cement plaster	Kisumu	100 (41)	-
				Burned brick	Kisumu	71(34)	-
				Mud	Kisumu	100 (31)	-
Boma	Malenga Sanga	Oct 2, 2018	Cement plaster	Kisumu	47 (34)	-	
			Burned brick	Kisumu	100 (21)	-	
			Mud	Kisumu	94 (35)	-	

### 5.3 SUPPORT FOR VECTOR CONTROL TECHNICAL WORKING GROUP

PMI handed over support for the VCTWG to VectorLink in July 2018. The project supported a VCTWG meeting on December 14, 2018. The project will continue work to strengthen the VCTWG by ensuring meetings are held regularly on a quarterly basis to bring all stakeholders together, including Environmental Affairs Department (EAD), agriculture and insecticide regulatory institutions. These meetings will facilitate information sharing, program coordination, and the development of collaboration mechanisms among all partners working in areas that are relevant to malaria vector control in Malawi.

# 6 MONITORING AND EVALUATION

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## 6.1 KEY OBJECTIVES

The key objectives of VectorLink Malawi M&E activities are to:

- Emphasize accuracy of both data collection and the data entry process through comprehensive trainings and supervision at all levels;
- Streamline and standardize data flow to minimize errors and facilitate timely reporting; and
- Ensure IRS data security and storage for future reference through establishment and enforcement of proper protocols

## 6.2 STRUCTURE DEFINITION

VectorLink Malawi produced a structure definition document for IRS in Malawi that was shared and approved by PMI and the NMCP prior to the commencement of the spray campaign. The document clearly defined eligibility criteria for sprayable structures in the Malawian context.

## 6.3 DATA MANAGEMENT

During the 2018 IRS campaign, data were collected and verified using standardized forms designed to capture all core PMI indicators. See Annex D for details on the data collection tools and use.

The VectorLink Malawi M&E team adhered to the former PMI AIRS M&E protocols and introduced modifications in the data collection tools based on Malawi context with support from project peers and the home office M&E specialist. These improvements ensured collection, management, and reporting of high-quality data. The VectorLink Malawi team was the first to roll out the newly designed and configured VectorLink Collect DHIS2 database. The new database, with its dynamic dashboards, and regular quality checks helped the M&E and operations teams to produce real-time reports for rapid feedback, provided data for supervision teams to follow up on spray quality, facilitated reconciliation of data collection errors, and helped to prevent additional errors in data collection and entry.

Data flow started with the SOPs and mobilizers who served as primary data collectors; data that they collected were verified by team leaders and IEC assistants, respectively, who then completed relevant summary forms. All forms were verified to ensure appropriate sections were filled out correctly, and the corresponding supervisor signed the form to indicate that it was reviewed appropriately. Together with the M&E assistant, the IEC assistants and site managers worked to ensure that all the forms reached the data centers at the end of each day or the following morning.

### 6.3.1 DATA QUALITY ASSURANCE AND VERIFICATION

To ensure data integrity, VectorLink Malawi used a standardized approach to data collection by providing standard tools and required training for all the data collectors and supervisors at each level. See Annex D for a complete list of the tools used to ensure quality at the various levels of data collection. In addition to existing supervisory tools, the VectorLink Malawi program adapted a new tool, called the IEC Supervision form. The IEC supervisor used this form during field supervisory efforts with mobilizers to ensure that structures in targeted areas were reached through mobilization and that key IRS messages were communicated to the household residents.

The project employed eight seasonal workers as M&E assistants, one for each operational site. A main role of the M&E assistants was to observe and provide feedback on data collection in the field. The DCV form, digitized and reported via the CommCare platform, was an important tool used to check the accuracy of data collection. M&E assistants visited villages after spraying was terminated, randomly sampled structures based on an established skip pattern, and compared the coverage represented in their small sample to the coverage reported by SOPs through the VectorLink Collect database. In total, 2,400 structures were visited via the DCV exercise. The most common issue detected was the under-reporting of eligible structures. SOPs were not recording unsprayed structures, particularly those that were locked or had no one home on the day of spray. The M&E team provided corrective feedback regarding this error to SOPs, team leaders, and field supervisors during morning mobilization and field supervision. The team emphasized that all eligible structures were part of the total structures found, whether locked or open. This issue was detected early in the spray campaign, which allowed for corrective action and continuous follow-up during the campaign. Additionally, DCV data was used to target mop-up; villages with below 85 percent coverage as reported via the DCV process were targeted for mop-up, no matter the coverage reported in DHIS2 via SOP data.

For data entry quality assurance, the VectorLink Collect DHIS2 database provided quality checks in the form of data validation rules at point-of-entry and post-entry cleaning tools. The validation checks for data errors or potential outliers enhanced data quality at the point of entry.

## 6.4 DHIS2

The VectorLink team in Malawi was the first to implement the VectorLink Collect DHIS2 system for data management and reporting. BAO Systems developed a custom VectorLink DHIS2 instance to serve as the primary, centralized database across the VectorLink Malawi project. In Malawi, DECs used both the offline-enabled desktop and web-based applications to enter mobilization and spray data. The desktop application provided a platform to work offline, which was important given the interruptions in connectivity experienced at the data centers. Both applications channeled data to the central DHIS2 database for final storage and reporting. All electronic data are securely stored and backed up on DHIS2 VectorLink servers, cloud-hosted by the BAO Systems team.

### 6.4.1 DATA ENTRY

Data entry was done at two main data centers, namely, in the Boma at the District Hospital and in Nkhunga at the Nkhunga Health Center; a third data center was temporarily set up in Kasungu to support the entry of data that came from the Lupachi operations site, a hard-to-reach site that only operated for the first 14 operational days of the campaign.

At the data centers, DECs performed a final verification of data on the forms, checking for completeness and arithmetic, before entering the data into the database. To ensure timely generation of weekly client spray progress reports, DECs worked to enter data by summary totals within 24 hours after spray, and by structure details within 48 hours after spray. Meeting the 48-hour turnaround posed a challenge for data received from the two largest operational sites, Dwangwa and Boma. This was due to the large number of forms received and the delayed dispatch of forms from the field because of the time the sites took to correct errors before submitting the forms. Entering data both by “totals” and “details” served as a form of double data entry that allowed the project to clean data to ensure its accuracy. After data entry, DECs filed daily SOP forms at each data center by the team leader code and date.

### 6.4.2 DATA CLEANING

DECs at the Boma and Nkhunga data centers cleaned the data, which involved the following:

- Ensuring completion of all necessary corrections so that the data entered by totals and details were in agreement
- Checking and removing duplicate records
- Identifying and entering missing records

To clean data, the DECs used the variance report in DHIS2, which served to highlight the variations between totals and aggregate of details by date of spray, location, and SOP. Additionally, DECs used the duplicate finder to flag duplicate entries in the system for both spray and mobilization data. Data were cleaned daily throughout the spray campaign, with final data cleaning completed three weeks after the end of IRS campaign.

## 6.5 IRS RESULTS

During the spray campaign, 112,264 of the 118,355 found structures found were sprayed, a spray coverage of 94.9 percent. A total of 501,324 people were protected, including 11,066 pregnant women and 90,953 children under five (see Table 10).

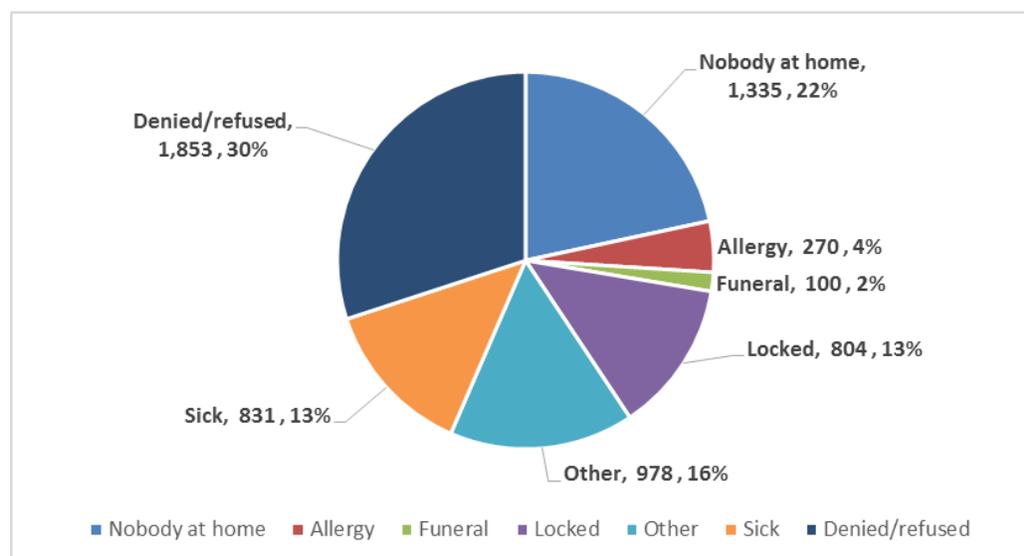
**TABLE 10: SUMMARY OF RESULTS FOR 2018 IRS CAMPAIGN**

Traditional Authority	Total Structures Found	Total Structures Sprayed	Spray Coverage (%)	Total Population Protected	Pregnant Women Protected	Children <5 Years Protected
Kafuzira	10,886	10,339	95	51,405	1,894	8,335
Kanyenda	36,897	34,529	93.6	149,039	2,738	24,971
Malengachanzi	25,600	23,800	93	115,790	2,491	21,277
Mphonde	7,847	7,626	97.2	37,912	754	6,591
Mwadzama	27,107	26,379	97.3	113,907	2,473	23,725
Mwansambo	10,018	9,591	95.7	33,271	716	6,054
Total	118,355	112,264	94.9	501,324	11,066	90,953

### 6.5.1 REFUSALS AND STRUCTURES NOT SPRAYED

In the 2018 VectorLink spray campaign, 6,091 structures (5.1 percent of total structures found) were not sprayed. The reasons for structures not being sprayed were: refusals (30 percent), nobody at home (22 percent), “other” reasons (16 percent), locked structures (13 percent), sick person in the structure (13 percent), allergy (4 percent), and funerals (2 percent). The pie chart in Figure 6 illustrates this.

**FIGURE 6: REASON FOR UNSPRAYED STRUCTURES**



## 6.5.2 INSECTICIDE USE AND STRUCTURES SPRAYED PER SPRAY OPERATOR

VectorLink Malawi used a total of 47,743 bottles of insecticide during the 2018 campaign. On average, one bottle sprayed 2.4 structures (see Table 11). Each SOP sprayed on average 9.8 structures per day.

**TABLE 11: INSECTICIDE USE**

Operations Site	Structures Sprayed	Total Insecticide Used*	Average Number of Sprayed Structures per Bottle	Average Number of Structures Sprayed per day per SOP
Benga	11,517	5,050	2.3	9.9
Boma	23,800	11,761	2.0	8.6
Bua	14,114	6,280	2.2	12.6
Dwambazi	8,953	4,074	2.2	8.8
Dwangwa	28,041	10,167	2.8	10.8
Lupachi	1,386	640	2.2	7.1
Mkaika	14,862	6,257	2.4	9.3
Mwansambo	9,591	3,514	2.7	11.6
Total	112,264	47,743	2.4	9.8

During the final few days of the spray campaign, SOPs were shifted to various sites to ensure the spraying was completed in a timely manner. The SOPs brought the insecticide from their own sites, so it is captured in the site of origin.

The Monitoring and Evaluation Plan Matrix in Annex E captures details on all programmatic indicators.

# 7 ENVIRONMENTAL COMPLIANCE AND SAFETY

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VectorLink Malawi carried out the 2018 IRS campaign under the Supplemental Environmental Assessment (SEA) for 2018–2022, which was approved prior to the initiation of the spray campaign. The project upheld the principles of making safety and environmental compliance a top priority during the spray campaign in order to ensure compliance with the environmental standards as specified in the IRS BMPs and local guidelines.

## 7.1 BASIC SAFETY PRECAUTIONS

During IRS operations, all staff were required to adhere to requirements for environmental and human safety related to IRS. As such, VectorLink Malawi instituted mitigation measures. VectorLink staff, government counterparts, and seasonal workers at risk of exposure to insecticide were provided appropriate PPE including coveralls, gloves, boots, helmets, face shields, neck protection, and dust masks for use during the spray campaign.

VectorLink Malawi undertook efforts to reduce potential exposure during the end-of-day clean up. The wash areas were fenced and locked to prevent unauthorized access when not in use. Team leaders monitored the wash areas while spray pumps were thoroughly cleaned through the application of the progressive (triple)-rinsing principles. All the PPE was washed daily in order to minimize the risks of insecticide exposure to workers.

Measures were also undertaken to protect the home owners from possible insecticide exposure during spraying. SOPs advised homeowners to keep a safe distance during the mixing of insecticide and the pressurization of pumps. Additionally, they reminded homeowners to remove all moveable items from their homes in preparation for spray, to observe the recommended waiting period before re-entry into the house after the spraying, and to deposit all debris swept from a sprayed home into a latrine or to dig a small hole and cover the debris.

## 7.2 ENVIRONMENTAL COMPLIANCE DOCUMENTATION

To support environmental compliance in Malawi, the VectorLink Project developed a number of documents to guide the project's work. These included the SEA for PMI/USAID, as well as other documents required by EAD and internal guides.

Home office Environmental Compliance Manager Albert Acquaye traveled to Malawi in June 2018 and worked closely with the VectorLink Malawi ECO and other key stakeholders for the development of the SEA. The approved SEA has a nationwide scope and covers the pyrethroid, carbamate, and organophosphate classes of IRS insecticides as well as chlorfenapyr, clothianidin, and the clothianidin/deltamethrin combination. The SEA was conducted in close collaboration with the NMCP, with the NMCP deputy program manager accompanying VectorLink staff on all field visits required for the SEA. The SEA was prepared in accordance with the provisions of US 22 CFR (216) regarding the use and application of pesticides and was approved by USAID in September 2018.

VectorLink Malawi also developed a project brief and an Environmental and Social Management Plan for submission to the EAD per local requirements. Additionally, the project developed documents to guide waste management, including a Waste Management Plan and Memoranda of Understanding (MOUs) with paper and plastic recycling companies.

## 7.3 PRE-SEASON ENVIRONMENTAL ASSESSMENT

During the 2018 IRS spray campaign, VectorLink Malawi conducted two Pre-Season Environmental Compliance Assessments (PSECAs) at all 10 project sites – eight operations sites and two central warehouses – using the smartphone-installed checklists. The data inputted was transmitted to a central database via an automated server and in return the project instantly received a worklist that was shared with the Chief of Party, operations manager, and ECO to guide them on actions needed to prepare the operations sites for the IRS spray campaign.

The first-round/initial PSECA, conducted in August 2018, identified the environmental compliance gaps. In addition to the general refurbishment of structures at the site and the provision of soak pits, wash areas, and toilets for male and female workers, the most common issues highlighted in the worklists involved minor refurbishments such as installing double locks, danger warning signs, and fire extinguishers, and posting of emergency and spill response procedures. VectorLink Malawi developed a work plan and the team worked and addressed all the gaps prior to the start of the campaign.

VectorLink Malawi conducted the second-round/final PSECA one week before spray operations began. Like the initial PSECA, it looked at all the sites and both warehouses. During the final PSECA, VectorLink Malawi made sure it had remediated all issues identified by the initial PSECA. All sites and warehouses were found to be ready for the IRS campaign; all operational sites were greenlighted to conduct the IRS spray campaign for 2018.

## 7.4 MID-SPRAY ENVIRONMENTAL INSPECTIONS

The project and government partners conducted mid-spray environmental compliance assessments and supervision at all operational sites. To do this, they used five standard IRS checklists loaded on ODK and CommCare: 1) End-of-Day Clean-Up; 2) Homeowner Preparation and Spray Operator Performance; 3) Spray Operator Morning Mobilization; 4) Spray Operator Transportation Vehicle Inspection; and 5) Storekeeper Performance. Inspections were conducted on a daily basis and according to the supervision plan. In response to issues found during the completion of checklists, supervisors provided instant guidance and direction to seasonal workers to ensure environmental and safety compliance.

The supervision checklist results indicated a significant level of compliance with the recommended environmental standards. That said, there were issues with the feedback mechanism due to lack of familiarity of some supervisors with the smartphone supervision checklists. The team followed up on all red flags reported via the checklist. Despite the training provided on the mobile tools, follow-up revealed that most non-compliance instances were reported in error, that is, a non-compliance response or practice form was submitted by mistake. In future years, the project will dedicate more time to training on tools and getting supervisors familiar with the use of the smartphone checklists.

## 7.5 MEDICAL EXAMINATIONS

VectorLink Malawi and the MOH ensured all SOPs and team leaders underwent a medical examination in September prior to their involvement in the 2018 campaign in order to assess their level of fitness for the IRS operations. Additionally, pregnancy tests were administered for all female seasonal workers who would be working with the insecticide, namely SOPs, team leaders, spray supervisors, site managers, storekeepers, and washers. As noted previously, during the initial medical examinations, three seasonal workers were found to be pregnant and were assigned to support mobilization. Pregnancy tests were repeated 30 days after the initial test for all female seasonal workers with the potential for insecticide exposure. During the follow-up testing, four female seasonal workers tested positive. They were re-assigned to mobilization duties in order to prevent fetal exposure. Those affected female workers retained their normal wages.

## 7.6 TRANSPORTATION SAFETY

To minimize the risk of insecticide exposure and spillage, all trucks that transported insecticide and minibuses that transported SOPs underwent pre-contract vehicle inspections that certified them for operations according to BMP criteria for transport vehicles. VectorLink Malawi conducted the inspections with the support of the ECO and traffic police officers. The project verified that all drivers had valid licenses, and that all vehicles had valid insurance and the required inspection documents. Additionally, the inspection focused on the condition of vehicles used for IRS operations as per the requirements of the BMP and Malawi road traffic guidelines. The ECO provided certificates of inspection for all vehicles that were approved to be used in IRS operations.

In order to ensure maximum compliance with safety issues, the ECO and the traffic police officers organized and offered a one-day training for the minibus drivers. Each vehicle was provided with a first aid kit, material safety data sheets, accident/emergency procedure sheets, a vehicle inspection certificate, and a spill kit for spill management.

## 7.7 MANAGEMENT OF INSECTICIDE ADVERSE EFFECTS AND OTHER INCIDENTS

VectorLink Malawi, jointly with Nkhotakota DHO, organized and conducted a training on insecticide poisoning and management for medical officers from all 21 health facilities across the district. Health facilities were also provided with atropine in order to offset any observed adverse effects of exposure to Actellic. In this way, VectorLink Malawi prepared health facilities to address adverse effects that community members and/or the spray operations support staff might experience during spray operations.

Thirteen incidents were reported during the campaign. Seven of them were determined to have been caused exclusively by external factors outside of project control. One involved insecticide exposure that required medical attention. Four incidents, reported in the operations site of Benga, Lupachi, Mkaika, and Bua, involved missing insecticide. Table 12 summarizes all incidents and the corrective actions taken by VectorLink.

**TABLE 12: SUMMARY OF INCIDENT REPORTS AND CORRECTIVE ACTION TAKEN**

Incident #	Incident Summary	Corrective Action Taken
MLW-100518-001- Exposure	Washer sprayed self in eye when assisting cleaning.	Reminded all supervisors that washers assisting with end-of-day clean-up are required to wear a helmet with a visor in the down position. Issue addressed in morning assembly.
MLW-100818-002-Exposure	Loose hose leaked insecticide on the SOP when he shouldered the pump.	Reminded all SOPs during morning assembly to check that pumps do not have any leaks and to de-pressurize pumps before moving from one structure to another.
MLW-100918-003-Other	Beneficiary vomited upon re-entering sprayed home; the landlord had received the correct information from the SOP about leaving the structure closed for 2 hours and then opening the windows and doors for 30 minutes and sweeping before re-entry. However, the landlord did not pass this info on to the tenant.	Reminded SOPs to emphasize the waiting period after spray and airing of the structures when educating homeowner.
MLW-101318-004-Health-Safety	SOP fainted during work.	Reminded site supervisors to enforce the mandatory requirement for team leaders to conduct the daily health check of SOPs and ensure that SOPs are well hydrated before leaving for the field. The worker reported for work on October 16, but the project advised her to take an additional day to rest. On October 17, she resumed work.

Incident #	Incident Summary	Corrective Action Taken
MLW-101618-005-Health-Safety	Dog bite.	Patient received rabies vaccine; condition monitored; SOP was paid for all associated missed days of work.
MLW-101618-006-Spill	Insecticide spilled when a chief/homeowner dumped the SOP's pump that had water collected from barrel 7 in the morning; chief/homeowner was insisting that the SOP spray his house with 2 full bottles of insecticide.	Used radio announcements to address community misunderstanding about the mixing of insecticide (i.e., the SOP carries liquid from the operations site to mix insecticide at the first structure sprayed each day) as well as the amount of insecticide used to spray a structure (i.e., it is not one bottle per structure).
MLW-101818-007-Health-Safety	SOP twisted his ankle when helping a homeowner remove materials.	Monitored the SOPs recovery; reminded SOPs to take care when assisting homeowners with emptying their homes.
MLW-102018-008-Accident	Empty and full bottles of insecticide fell off truck during demobilization transport from the Lupachi site.	All full and empty bottles were recovered.
MLW-102518-009-Health-Safety	Fire at Bua operational site started as the result of washers burning trash nearby.	Warned workers (washers, guards, and storekeepers) to not burn any material at the operations site. They were reminded that standard practice is to keep all plastic and non-plastic waste in designated containers at the site. The materials will be disposed of appropriately after the campaign.
MLW-102018-010-Theft	Theft of one bottle of insecticide by a SOP; SOP was caught and immediately dismissed and reported to the police. Team leader who failed to properly supervise the distribution of insecticide was demoted to SOP. Insecticide was recovered.	During morning mobilization, team leaders were reminded to fully supervise the receipt of insecticide on the part of SOPs; SOPs were warned that taking insecticide would result in immediate dismissal.
MLW-102518-011-Health-Safety	Dog bite.	Patient received rabies vaccine; condition monitored; SOP was paid for all associated missed days of work.
MLW-102718-012-Theft	One bottle of insecticide went missing at Bua operational site.	Police and VectorLink, with DHO support, investigated the case. The missing bottle was not recovered.
MLW-103118-013-Theft	Five bottles of insecticide missing from Mkaika site; not reported by storekeeper.	Police and VectorLink, with support from the DHO, investigated the case. The project also has worked with community leaders to recover the missing bottles. It continues to investigate the case, but thus far, has not recovered the bottles.

## 7.8 POST-SEASON ENVIRONMENTAL ASSESSMENT

VectorLink Malawi conducted the Post-Season Environmental Assessment across all the eight sites using the smartphone-installed checklist phones. The exercise started was carried out in Lupachi on October 23, 2018. The rest of the sites were completed on November 12–17. The assessment confirmed all IRS items, including insecticides and IRS waste, were collected from the operational sites and returned to the central warehouse. The assessment also indicated that all the soak pits and their surroundings areas had been cleaned and cleared of any waste and IRS items. Soak pits were secured with locks and the wash areas were covered with plastic sheets and a layer of soil to protect them from vandalism as well as contamination by humans and animals. The floors of the operational site stores were decontaminated with soap and water and the keys were returned to the owners/landlords.

## 7.9 IRS WASTE DISPOSAL

Collection and transportation of IRS items from temporary operational site storerooms to the central warehouses was done within three to five days after completion of the spraying operation. The types of waste that VectorLink Malawi segregated, collected, and transported to the central warehouses included empty bottles, used masks, dry cell batteries, torn gloves, waste paper, and plastic visors. The project identified three key disposal methods – recycling, incineration, and landfilling – to be used according to the type of waste. VectorLink Malawi signed MOUs with plastic- and paper-recycling companies. The empty insecticide bottles and other plastic waste will be used for production of air vents, plastic sheets, and electric conduits. Prior to collection by the recycling companies, VectorLink removed all labels from bottles and punched holes at their bases. Recycled waste paper will be used in the production of cardboard cartons and toilet tissue paper cores. The VectorLink ECO and other stakeholders will periodically supervise the recycling process to make sure it conforms to the terms and conditions stated in the MOUs.

Incineration was deemed a safe disposal method for all the contaminated used masks. The DHO allowed VectorLink to use the Nkhotakota District Hospital incinerator. To prepare for landfilling at the Illova dumpsite in Dwangwa, torn gloves were shredded, and used dry cell batteries were encased in concrete. For Year 2, the project is exploring the possibility of developing an agreement with local battery manufactures to receive and safely dispose of used batteries.

Table 13 lists the type and amount of waste and method of disposal that VectorLink Malawi used for its wastes. Annex F contains the full Environmental Mitigation and Monitoring Report.

**TABLE 13: SUMMARY OF 2018 IRS WASTE AND DISPOSAL METHODS**

No	Item Description	Unit of Measure	Quantity	Disposal Method
1	Masks	kg	245.34	Incineration
2	Empty bottles	no	47,745	Recycling
3	Plastic sheets	kg	To be confirmed	Recycling
4	Visors	no	565	Recycling (To be confirmed)
5	Cardboards and papers waste	kg	2900	Recycling
6	Gloves	no	102	Shredding and landfilling
7	Dry cell batteries	no	1420	Encasement and landfilling

# 8 GENDER MAINSTREAMING

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VectorLink Malawi implemented a number of activities in support of gender mainstreaming. These are described below:

- **Training:** VectorLink Malawi included gender sensitivity sessions in all IRS trainings conducted (ToT, mobilizer training, SOP trainings, as well as M&E and DEC training).
- **Increased recruitment of women:** VectorLink Malawi used the national and district micro-planning meetings to discuss the importance of equal representation of men and women as seasonal workers in all IRS. All job advertisements for seasonal workers specifically encouraged women to apply for all positions. The recruitment process ensured that women were represented. When a female candidate had equal positions merit to a male candidate, she was given priority. As a result, out of the 634 people VectorLink Malawi hired as seasonal staff, 40.4 percent (n=256) were women. Of the 476 people hired as SOPs and team leaders, 39.6 percent and 38.8 percent, respectively, were women. VectorLink Malawi will continue to advocate for recruitment of more women in all IRS activities.
- **Gender-friendly work environment:** VectorLink Malawi ensured the work environment was suitable for mixed-gender teams by constructing separate standalone double bathrooms and toilets for both men and women in each operations site. Female security guards were also considered for day shift duties only.
- **Distribution of pads to women seasonal workers:** VectorLink Malawi distributed 292 reusable sanitary pads to women seasonal workers during the 2018 spray campaign. The pads were procured to eliminate menstruation as a possible barrier to women's participation in the campaign. Before distribution, the VectorLink Malawi gender focal person briefed gender focal points for each operations site on female hygiene, care, and use of the reusable pads. These gender focal points then conducted similar briefings in their respective operational sites.

However, some female seasonal workers – those on certain types of family planning who had heavy cycles – found the reusable pads inadequate for an entire day in the field and difficult to use. They pointed out that they carried insecticide in their issued bag and did not have a separate bag in which to carry extra pads. To address this, VectorLink Malawi immediately procured and distributed 200 disposable pads to all female seasonal workers who did field work.

- **Alternative duties for pregnant IRS workers:** VectorLink Malawi ensured that no woman lost her job or suffered a reduction in pay because of pregnancy. All seven women who tested pregnant were assigned to mobilizer duties with the same wage as in their previous position.
- **Gender awareness guidelines and messages:** VectorLink Malawi translated sexual harassment posters into Chichewa and posted them at each operations site to emphasize VectorLink's commitment to a safe and respectful workplace for all. In addition, VectorLink Malawi prepared job aid messages on sexual harassment and disseminated these regularly to all seasonal workers throughout the spray campaign.

## 9 CAPACITY BUILDING OF THE MINISTRY OF HEALTH

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VectorLink Malawi conducted IRS implementation in close collaboration with the NMCP and the Nkhosakota DHO and District Council to promote sustainability of IRS in the future. During the planning phase of IRS activities, VectorLink Malawi worked with these same partners in all pre-IRS activities, including identification of central warehouses and operational sites and stores, preparation of the SEA, recruitment, and training. VectorLink Malawi organized and conducted a master trainer workshop with representatives of the NMCP, DHO, and District Council to equip them with the knowledge and skills required to effectively prepare seasonal workers to implement, with high quality, all aspects of IRS. During ToTs, VectorLink Malawi worked with these government partners to facilitate and conduct trainings of IEC assistants, site managers, and spray supervisors. They also played an active role in facilitating mobilizer and SOP training. Additionally, they helped to organize and facilitate the adverse effect management training for clinicians.

To further build the capacity of the NMCP, DHO, and District Council, VectorLink Malawi worked alongside AEHOs and other government supervisors for all 32 days of the spray operations. The NMCP and district-level government staff were key partners in IRS supervision. VectorLink and government counterparts shared feedback daily via a joint WhatsApp group and a weekly team meeting to share experiences, highlight issues, and develop recommendations. Local government counterparts supported VectorLink in addressing all challenges, including regarding mobilization and missing insecticide.

In February/March 2019, VectorLink Malawi, in collaboration with PMI, the NMCP, and the DHO, is planning to conduct a capacity assessment to determine the Malawi government's capacity to carry out the technical, operational, and management functions that are key to implementing IRS and to identify which areas need strengthening.

# 10 POST-SEASON ACTIVITIES

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## 10.1 POST-SPRAY REVIEW MEETING

VectorLink Malawi, in collaboration with the NMCP and Nkhotakota DHO, convened the 2018 IRS Review Meeting on November 27, 2018. Sixty people (46 men and 14 women) participated in the meeting. Participants were from the following organizations/cadres: Nkhotakota DHO (11); Nkhotakota District Council (9); health centers (6); site managers (7); IEC assistants (8); ONSE (1); Pakachere Institute (1); Nkhotakota community radio (1); PMI (1); NMCP (2); and VectorLink Malawi (13).

The overall aim of the IRS Review Meeting was to:

- Present data from the 2018 spray campaign,
- Review the overall IRS implementation process, experiences and achievements for the 2018 spray round, and
- Discuss IRS challenges in the eight operations sites and identify recommendations for the next spray cycle.

The meeting involved small group discussions that focused on recruitment, mobilization, supervision of spray operations, geographical hierarchy, and seasonal worker payment. These areas of discussion were chosen because they were areas that had significant challenges during the 2018 campaign. Discussions were centered on successes, challenges, and recommendations for 2019.

The final section of this report on challenges, lessons learned, and recommendations incorporates the findings from the review meeting.

## 10.2 INVENTORY

Following completion of IRS operations, VectorLink Malawi transported all commodities from the site stores to the two central warehouses in Nkhotakota District, the central goods warehouse and the central insecticide warehouse. The site storekeepers updated their stock records and submitted them to the warehouse manager and logistics coordinator. The logistics assistant, together with the warehouse manager and logistics coordinator, updated stock records to show the remaining stock, including the commodities that were retrieved from the site stores. They also updated the central warehouses inventories accordingly. See Annex G for IRS commodities stock.

# II CHALLENGES, LESSONS LEARNED, AND RECOMMENDATIONS

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Despite working under very tight preparation timelines and having only two veteran IRS staff members, overall Malawi had a very successful first-year IRS campaign. IRS acceptance was very high and spray coverage was over 95 percent. Forty percent of hired seasonal workers were female. VectorLink Malawi's close collaboration with the NMCP and Nkhotakota DHO facilitated capacity building and local ownership of the campaign. That said, challenges and lessons learned from Year 1 produced recommendations for improving IRS implementation in Year 2.

## II.I CHALLENGES AND COURSE CORRECTIONS

VectorLink encountered many challenges but was able to immediately resolve a large number of them.

Mobilization:

- Door-to-door mobilization was a challenge for a number of reasons, including:
  - Door-to-door mobilization in most operational sites started and ended late because IEC materials (IRS cards and mobilizer forms) were not available for the scheduled start. The activity was extended to October 6, 2018, in Mwanambo, Mkaika, Benga, and Bua to compensate for the delayed start.
  - Most mobilizers were HSAs employed by the MOH. Not long before the start of door-to-door mobilization, they experienced issues getting paid for work on the MOH's massive bed net registration campaign, and thus, were concerned about being paid by VectorLink. Consequently, some worked at a slow pace during door-to-door mobilization and others refused to submit mobilization forms until they were paid, which caused a backlog in the entry of the mobilization data.
  - Rather than carry out the mobilization activity as designed, mobilizers in some areas used volunteers to do the house-to-house mobilization, or they held community meetings where they handed out the IRS cards. This resulted in poor house-to-house mobilization and house marking.
  - Supervision of the mobilization activity was limited because the many mobilizers, 315, were covering vast expanses and there were only eight IEC assistants to oversee them and collect their mobilization data. VectorLink Malawi reimbursed the IEC assistants' travel, but this could not compensate for the ratio of IEC assistants to mobilizers.
- Initially, during mobilization that took place concurrently with spraying, coordination and communication between mobilizers and spray teams was poor. This meant that spray teams spent extensive time locating the villages and structures targeted for spray, which was detrimental to the teams' daily performance. IEC assistants were advised to coordinate with the community mobilizers and ensure that they accompanied spray teams to help locate villages and secure community acceptance of IRS.
- Other challenges with mobilizers related to their expectations about compensation. Influenced by previous campaigns, mobilizers expected to be paid at the same rate as SOPs. Additionally, since most did not live in their catchment areas, they wanted to be provided transportation to the targeted areas, or for the project to cover the cost of fuel for use of their own vehicles.

### Logistics:

- To reach remote areas, spray teams had to travel long distances on rough roads, which meant teams returned to operations sites late in the day. To address this, VectorLink Malawi emphasized the importance of starting early in the morning and finishing spraying around 1:00 pm so that spray teams could return to the site and complete end-of-day clean-up by 3:00 pm. Fortunately, these hard-to-reach areas were sprayed in the first week of the campaign, and the length of workdays improved later in the spray period.
- Issues with PPE sizing. Each operations site held a dress rehearsal prior to spraying to determine the sizes of PPE the seasonal workers needed. Though the majority of workers were assigned correctly fitting PPE at that time, during the first week of spraying, some were wearing PPE that did not fit them well. This was because teams had to return the PPE at the end of the dress rehearsal, and, because coveralls and boots were not labeled, workers were not issued the same garments when spraying started. Additionally, there was not enough PPE in small sizes. VectorLink Malawi ordered PPE sizes based on a bell curve distribution of sizes; however, most seasonal workers were smaller in stature than was expected.

### Operations:

- During the recruitment of seasonal workers, there was resistance by district-level government staff to VectorLink Malawi internally doing shortlisting of candidates based on selection criteria. In previous IRS campaigns, the local government staff had a greater role in shortlisting candidates. Additionally, they raised concerns about the short period during which applications were received and lack of traditional leaders being involved in verifying that shortlisted candidates were from the area.
- Given this was the first spray campaign in Nkhoswe District in six years, it was difficult to correctly estimate the number of structures to be targeted per village in each operations site. VectorLink Malawi's targets were derived mainly from HSA survey data, which were not always accurate – spray teams could reach a village and find many fewer or many more structures than the data indicated. This made for inefficient field operations and prevented the SOPs from meeting their daily spray targets. VectorLink Malawi worked with mobilizers to ensure that SOP assignments to villages corresponded to the mobilizers' knowledge of village size. In 2019, these issues will be avoided, since the project's 2018 spray data will be used to set targets.
- At times, house preparation did not go well, because homeowners were reluctant to remove all moveable household items. This was especially true during the first two weeks of spraying and in urban/trading areas. This resulted in high refusal rates and lowered SOP performance. Additionally, SOPs did not always make sure that all items had been removed prior to spray. In response, during morning mobilizations, VectorLink Malawi emphasized to all SOPs the need for proper household preparation and to team leaders and spray supervisors the need to check the preparation before SOPs begin spraying.
- Initial wall bioassays conducted in the Boma operations site showed a low mosquito mortality rate. VectorLink Malawi retrained all SOPs working in Boma on spray techniques. During morning assemblies, it emphasized the importance of quality spraying to all spray teams and of supervision to team leaders and spray supervisors.
- Team leaders observed spray technique errors during supervision but did not always report them on DOS checklists as red flags. This was likely because the team leaders immediately corrected the errors during DOS supervision.
- Boma and Dwangwa operations sites had 108 and 87 SOPs, respectively. Such a large numbers of SOPs at a single site was hard to manage and often resulted in operational inefficiencies, for example, crowding during morning preparations, which delayed spray team departures to the field in Boma, and prolonged end-of-day clean-up.

## M&E:

- SOPs did not record and/or mark all found and unsprayed structures particularly during the first week of spraying. In response, VectorLink Malawi promptly retrained SOPs on proper structure documentation and marking, and provided supportive supervision on this issue throughout the campaign. This reminded SOPs to always record and mark all structures found in the villages, no matter if they are locked or no one is home. Also, spray supervisors and team leaders were reminded of their critical supervisory role to ensure that SOPs record and mark all found and unsprayed structures. DCV data were used to identify any villages that had unrecorded unsprayed structures; progressive mop-up was scheduled to revisit areas where coverage was below 85 percent.
- In Year 1, mobilization data entry was delayed for several reasons. Observance of a religious holiday delayed the delivery of IT equipment. This in turn delayed the start of DEC training; rather than preceding mobilization, it had to be held as mobilization started. Thus, there was backlog of mobilization data entry from the very start, and it was difficult for the DECs to clear the backlog. At the same time, because mobilizers had to cover large areas, which could be distant from operational sites and separate the mobilizers from IEC assistants for several days, the mobilizers could not always submit their data collection forms on time. Then, when the forms arrived at the data centers, it was discovered that many village names recorded by mobilizers did not match the names in the DHIS2 database. The project M&E team, M&E assistants, DECs, and IEC assistants worked hard to reconcile village names so the data could be entered. The backlog in mobilization data entry coincided with the start of the IRS campaign and incoming SOP forms that also required prompt entry. This rush kept DECs from fully cleaning the mobilization data and thus “totals” were used for mobilization data reporting.
- VectorLink Malawi, in collaboration with the DHO, defined the geographical hierarchy for the first time using various government sources. However, errors in the initial hierarchy made revisions necessary during mobilization and spray. Additionally, use of the hierarchy was challenging. In many cases, mobilizers were recording the “child” village names, rather than the official “gazetted” village names. As noted in the preceding point, tracing and correcting the village name on forms resulted in large delays in data entry.
- Though data flow processes were outlined, IEC assistants struggled to collect data collection forms from mobilizers – as was also noted in the preceding point, the large number of mobilizers had vast geographies to cover. There was not a corresponding house-to-house mobilization calendar, which made it difficult to track mobilization progress in the database and follow up on house-to-house mobilization activities in the field.
- During the first weeks of the mobilization and spray campaign, DECs failed to meet daily entry targets of an estimated 350 lines per day. Once a DEC daily performance report was instituted at both data centers, performance improved.
- Data entry centers struggled with power outages and poor network connectivity. Although the desktop client worked offline for data entry, the network was required for data syncing. Inconsistencies in network strength delayed in data syncing. Data cleaning tools also required connectivity, and lack of continuous connectivity resulted in some delays in data cleaning.
- As Malawi was the first VectorLink country to implement the VectorLink Collect DHIS2 database, repeated system updates over the course of the campaign sometimes slowed data center productivity. The VectorLink Malawi M&E team was flexible and adaptive, however, and quick to manage the system changes to prevent interruptions of data center operations and timely reporting.
- SOPs were incorrectly recording insecticide data when they visited more than one village in a day and thus needed to use more than one Daily Spray Operator form. SOPs would record their total daily insecticide allocation and returns on each form, rather than splitting it between forms and thus were double reporting their insecticide usage. As a result, data in the DHIS2 database over-counted insecticide usage; significant effort was needed to clean the insecticide data so it could be reconciled with the operations site records.

#### mHealth:

- Supervisors struggled to use the smartphone platform for completing supervisory checklists. This produced a substantial number of erroneous red flags.
- Some questions on the supervisory checklists were not well understood by supervisors and did not apply to the local context.
- Site managers struggled with the PMT syntax requirements, which negatively affected PMT reporting.
- Some supervisors had to share smartphones, meaning that both could not complete their checklists each day.

#### Seasonal Worker Payments:

- Making five payments to seasonal workers was logistically difficult to support.
- Delay in the Airtel mobile money contract due to Airtel internal processes resulted in the first payment being one day late.
- Despite using an Airtel dongle and Airtel mobile phone tethering, there were issues accessing the Airtel Mobile Money system due to VectorLink Malawi's internet service provider. This meant that the project's finance team had to rely on Airtel to blast each payment rather than being able to blast payments themselves.
- There were challenges with workers cashing out payments. VectorLink Malawi asked that agents visit each site to facilitate cash-out the day after each payment; however, despite assuring the project that it would do so, Airtel visited only one site, and only once. To facilitate cashing out by workers in hard-to-reach areas, VectorLink Malawi transported them to commercial areas where they could cash out. This was often done in coordination with moving the minibuses to town for refueling. Additionally, although the project provided Airtel with projections of the amount that would be cashed out in each area, it was reported that some areas did not have enough cash to pay all seasonal workers.
- Seasonal workers with non-Airtel mobile numbers and non-registered Airtel mobile money numbers did not cash out in the required four days window; this resulted in uncollected payments being returned to VectorLink.
- Some seasonal workers provided wrong mobile numbers and/or changed their numbers several times during the spray campaign. Additionally, workers provided phone numbers that had been blocked by the network provider due to the Know Your Customer (KYC) campaign that required customers to register their phone numbers according to government mandate. For wrong numbers and numbers that were blocked by the KYC campaign, VectorLink had to request for Airtel to return those funds so that the money could be re-blasted.
- The Airtel mobile money system did not allow the VectorLink Malawi finance team to generate reports themselves. Instead, they had to request reports after each blast was completed and to follow-up on non-payment claims. Hence, information was not readily available.

## 11.2 LESSONS LEARNED AND RECOMMENDATIONS

#### Mobilization:

- Frequent meetings between mobilizers and VectorLink Malawi, together with the NMCP and DHO, helped to address mobilization concerns and positively impacted both mobilization and spray operational results.
- Daily feedback meetings between site managers, supervisors, and IEC assistants enhanced coordination and communication between mobilizers and spray teams and facilitated joint planning and implementation of both mobilization and spray operations activities.
- VectorLink Malawi will continue to impart information about the benefits of IRS to homeowners

through engagement with local leaders and mobilizers as well as radio adverts and talk shows.

- To ensure better mobilization supervision and timely submission of mobilization data, VectorLink Malawi should consider increasing the number of IEC assistants in Year 2.
- VectorLink Malawi aims to more widely work with community-based organizations in Year 2. To ensure that messaging is consistent, it should include these organizations in IRS mobilization trainings. Additionally, the project will work with ONSI and HC4L to develop a comprehensive package of messages that include the use of ITNs.

#### Logistics:

- VectorLink Malawi will instruct storekeepers to keep correctly sized PPE (coveralls and boots) of seasonal workers organized and labeled by team so that seasonal workers can retrieve the PPE that fit them. In Year 2, VectorLink should order more small-sized PPE to accommodate the Malawi workforce.

#### Operations:

- In Year 2, VectorLink Malawi should allow for more time between advertising the seasonal worker positions and the closing date for receipt of applications. Additionally, the project will ensure that all seasonal workers are from the areas in which they have applied to work by engaging local leaders to verify the residence of shortlisted candidates prior to interviews.
- Joint supervision by the VectorLink staff, NMCP, DHO, District Council, and AEHOs, along with the regular coordination meetings, and the WhatsApp group, were instrumental in addressing campaign issues in a timely manner across the whole district. This facilitated the smooth implementation of IRS and achievement of high spray coverage.
- Morning mobilization briefings, job aid messages, and close supervision were key tools in ensuring adherence to best practices for mixing of insecticide, spray techniques, and preparing structures for spraying.
- In Year 2, VectorLink Malawi should consider adding more operational sites to reduce the number of SOPs at the larger sites and to improve coordination and management.
- To improve team leader DOS reporting, VectorLink Malawi should strengthen the supervision that team leaders do and encourage them to report all issues/red flags they note in doing supervision, even if they have already corrected the erring SOP's behavior.

#### M&E:

- VectorLink Malawi should hold DEC and M&E assistant trainings well in advance of the start of operations so there is no delay in data entry.
- The VectorLink Malawi M&E team should determine data flow matrices and share them with the broader operations team in advance of the campaign. The team also should disseminate hard copies during trainings and reinforce the messages during supervisory visits to ensure the timely flow of information from the field to the data centers.
- The VectorLink Malawi team should revisit the geographical hierarchy based on experiences from the Year 1 campaign to refine group village and village names, to ensure our M&E system is set up to receive data captured in the field.
- To prevent recording of incorrect village names, in Year 2, VectorLink Malawi should instruct all SOPs to enter the correct geography information on the Daily Spray Operator form, based on the daily spray calendar, prior to leaving for the field.
- In Year 2, more DECs should be engaged in data cleaning to ensure that data are cleaned immediately after entry.
- In Year 2, VectorLink should work with the local internet provider to increase the bandwidth at each data center.

#### Gender:

- VectorLink Malawi will continue to engage the NMCP, DHO, District Council, and other key stakeholders in the recruitment of seasonal workers. However, it will continue to shortlist candidates to ensure the selection of seasonal workers is transparent and merit based. The project credits this recruitment practice with facilitating the high percentage of female seasonal workers hired.
- During future spray campaigns, VectorLink Malawi will distribute disposable sanitary napkins to female seasonal workers.
- VectorLink asked site managers and AEHOs to provide a list of high-performing staff that they would recommend for a promotion in Year 2. VectorLink will review the list and specifically target high-performing women for promotion.

#### mHealth:

- In Year 2, VectorLink Malawi should allocate more time for training on the supervisory checklists and navigation of the smartphone platform.
- More smartphones should be procured to ensure each supervisor is issued a smartphone to complete checklists so that sharing is not necessary.
- The wording of the all checklist questions should be reviewed and suggestions should be provided to clarify the meaning and ensure it is applicable to the local context.

#### Seasonal Worker Payments:

- VectorLink Malawi will arrange to have only one or two payment periods for seasonal support staff during future campaigns.
- VectorLink Malawi will meet with Airtel to address challenges with cashing out and arrange for more consistent support in Year 2.
- VectorLink Malawi will engage Airtel in Year 2 to provide orientation on mobile payments at all seasonal worker trainings.

# ANNEX A. SUMMARY OF OPERATIONS SITES AND CENTRAL WAREHOUSES REFURBISHMENT

**TABLE A-1: SUMMARY OF REFURBISHMENT COMPLETED AT OPERATIONS SITES AND CENTRAL WAREHOUSES**

Site	# of Soak Pits	Scope of Refurbishment
Benga	1	Construction of 2 bathing areas (men and women), and 1 permanent wash area with FSP, surrounded by fencing; refurbishment of storeroom; site bush clearing
Mwansambo	1	Construction of 1 permanent wash area with FSP, surrounded by fencing; refurbishment of storeroom, 2 bathing areas, and 1 double vault pit-latrine; site bush clearing
Mkaika	8	Construction of 2 bathing areas (men and women), and 2 temporary wash areas surrounded by fencing; installation of 8 PMSP; refurbishment of storeroom; site bush clearing
Boma	2	Construction of 2 bathing areas (men and women), 2 permanent wash areas with FSP, surrounded by fencing and 1 double vault pit latrine for women; refurbishment of storeroom, 2 water closet toilets for men; installation of water pipe and tap; site bush clearing
Bua	1	Construction of 2 bathing areas (men and women), 1 permanent wash area with FSP, surrounded by fencing, and 2 double vault pit latrines; refurbishment of storeroom; site bush clearing
Dwangwa	2	Construction of 2 bathing areas (men and women), 2 permanent wash areas with FSP, surrounded by fencing, and 1 double vault pit latrines; renovation of storeroom and 1 double vault pit latrine; installation of water pipe and tap; site bush clearing
Dwambazi	1	Construction of 2 bathing areas (men and women), 1 permanent wash area with FSP, surrounded by fencing, and 2 double vault pit latrines; renovation storeroom, 1 changing room, for women; site bush clearing
Lupachi	1	Construction of 2 bathing areas (men and women), and 1 permanent wash area with FSP, surrounded by fencing; refurbishment of storeroom; site bush clearing
Goods Central Warehouse	N/A	Refurbishment of warehouse and 2 single vault pit latrines; maintenance of access road to the site; site bush clearing
Insecticide Central Warehouse	N/A	Refurbishment of warehouse and 1 double vault pit latrine; waste disposal from clearing warehouse; site clearing of bush

# ANNEX B. 2018 PROCUREMENT LIST AND MATERIALS DISTRIBUTION

## INTERNATIONAL PROCUREMENT

**TABLE B-1: INTERNATIONAL PROCUREMENT**

Description	Unit	Quantity Procured /Received
Insecticide (Actellic 300CS)	Bottle	54,768
Sprayers (IK VC Super 7.50)	Piece	460
Tool to Tighten Chamber IK VC	Piece	5
Team Leader Kit 7.5 L	Piece	46
Pressure Regulator without Off (1178)	Piece	23
Complete Chamber IK VC Super (1183)	Piece	23
Complete Hose (1190)	Piece	23
Lance Tube (1177)	Piece	23
Complete Handle (1179)	Piece	23
Activated Charcoal	Kg	222
Respirator Mask	Piece	20,520
Green Nitrile Chemical Glove	Pair	1,152
Long Glove (Full-arm length)	Pair	96
Hard Hat	Piece	608
Face Shield Bracket	Piece	600

Description	Unit	Quantity Procured /Received
Face Shield (Visor)	Piece	600
Spray Operator Pocket Guide	Piece	1,000
Team Leader Pocket Guide	Piece	120
Storekeeper Pocket Guide	Piece	100

## LOCAL PROCUREMENT

Local procurement involved an open competitive tendering process in which VectorLink Malawi issued solicitations for quotes for services and materials. The VectorLink Malawi procurement committee based its selection on the lowest cost and technically acceptable bid according to the criteria in the solicitation for the quotations. The services/items procured locally included the following:

- Transportation services for IRS planning, operations, and supervision
- Printed materials for IEC, IRS data collection, and commodity tracking
- Stationery and assorted materials
- Operations site refurbishment materials, including materials for soak pits
- IT equipment
- Communication materials

Table B-2 details locally procured goods and services.

**TABLE B-2: LOCAL PROCUREMENT**

Description	Quantity/ Number
<b>IRS Transportation</b>	
Rented Vehicles used in Micro-Planning and Logistics Assessments	4
Rented Vehicles used in IRS Implementation	41
IRS Supervision Vehicles	8
Rented Vehicles for Post-IRS Activities	5
<b>Printing and Photocopying</b>	
Stock Cards	2,000
Goods Issued Note Book	250
Request Book	200
Goods Receipt Note	20
Spray Operator Form	25,000
Team Leader Form	4,500
Mobilizer Form	19,000
IRS Cards	164,800
Daily Health Team Leader Checklist	4,200

Description	Quantity/ Number
Vehicle Inspection Certificate	40
Spill Response Form	60
Material Safety Data Sheet	60
Emergency Response Procedure Form	60
Temperature Monitoring Sheet	20
Driver's Policy	60
Daily Summary Report for Site Managers	300
Insecticide Distribution Card	300
Delivery Note Book	20
Store Commodity Ledger Book	25
Daily Mixed Insecticide Returned from Field Tracking Form	2,400
Vehicle Daily Log Sheets	600
Photocopies of Assorted Documents	7,898
<b>Training Manuals</b>	
Training and Facilitation Skills for IRS	2
Approaches for Training IRS Seasonal Workers	2
Facilitator Guide for SOP's	8
Facilitator Guide for Store Keepers	2
Facilitator Guide for Team Leaders	8
Facilitator Guide for Health Workers	2
Facilitator Guide for Wash Person	8
Facilitator Guide for Security Guards	8
Facilitator Guide for Drivers	2
Facilitator Guide for Data Entry Clerks	2
Facilitator Guide for Community Mobilizers	8
Facilitator Guide for Pump Technicians	8

Description	Quantity/ Number
<b>Communication Materials</b>	
USAID Stickers	1,000
11" x 13" Magnetic Decals for Vehicles	4
IRS Posters	200
Banner for IRS Launch	1
Banners for IRS Operations sites	8
Long Banner for Promoting IRS	3
Gender Sexual Harassment Guidelines	8
PMI Logo Painted on Metal Sign Board for Central Warehouses and Operation Stores	10
Flyers	100
Leaflets	120,000
Performance Monitoring Tracker	8
Warning/Danger Signs	40
<b>Assorted Materials</b>	
Filter (Tea Strainer)/Sieve	440
Mops	20
Small Plastic Bucket with a cover(for spill kit)	50
Broom	20
Shovel	50
Barrel, 100 L.	104
Barrel, 500 L.	10
Liquid Hand Washing Soap	20
Clothes line (Roll)	10
Chalk (Packets of 100 sticks)	220
Heavy Duty Brush	50
Jerry can 20 L	50
Megaphone	24
Detergent – Powder Soap	4,000

Description	Quantity/ Number
Towels	900
Polythene Sheeting (4m x 4m)	440
Bathing Soap	2,100
Yellow Chemical Apron (LIB1328)	72
Buckets (Metallic with Cover)	50
Basin	135
Dust Pan for Spill Kits	50
Sisal Rope – cylinder roll, 80m length, 2mm diameter	10
Powder (talc/baby powder) tin	900
Lubricant oil, original 125ml (general purpose)	4,993
Empty sacks (100kg)	300
Toothbrush (for cleaning nozzles)	500
Stick cut (45 cm)	50
Stick cut (60 cm)	50
Stop Watch	50
Laundry Soap 250 g, bar	4,000
Flashlights (Small)	600
Flashlights (Large)	10
Bags for Mobilizers (Backpacks)	340
Bags for SOPs, team leaders and Supervisors (a.k.a. Haversacks)	528
Black PVC Knee Boots, Size 37	20
Black PVC Knee Boots, Size 38	88
Black PVC Knee Boots, Size 39	148
Black PVC Knee Boots, Size 40	140
Black PVC Knee Boots, Size 41	144
Black PVC Knee Boots, Size 42	72
Black PVC Knee Boots, Size 43	72
Black PVC Knee Boots, Size 44	36

Description	Quantity/ Number
Socks (Pair)	1,355
Whistle for Security Guards	20
Fire Extinguishers - CO2 and Dust Powder, Medium Size	20
Dustbin, Plastic	10
Measuring Cylinder	50
Digital Thermometers	15
Batteries for Digital Thermometers	15
Dustbin (Sanitary)	10
Batteries (Small)	3,600
Batteries (Large)	2,266
Poly/Cotton Coveralls, Blue, Medium (M)	142
Poly/Cotton Coveralls, Blue, Large (L)	305
Poly/Cotton Coveralls, Blue, Extra Large (XL)	339
Poly/Cotton Coveralls, Blue, Extra Extra Large (XXL)	203
Poly/Cotton Coveralls, Blue, Extra Extra Extra Large (XXXL)	135
Poly/Cotton Top, Size S	136
Poly/Cotton Top, Size M	61
Poly/Cotton Top, Size L	34
Poly/Cotton Bottom, Size S	136
Poly/Cotton Bottom, Size M	61
Poly/Cotton Bottom, Size L	34
Reflective Vest	151
Screw Drivers	6
First Aid Kit	40
Pregnancy Test Kit	540
Urine Cup	540
Atropine Injection	120
Antibiotic Cream (Zylo-P)	50

Description	Quantity/ Number
Eyewash (Saline)	50
Paracetamol/ Aspirin (500mg (2x strips of 10)	50
MSP Buckets	10
MSP Carrier Buckets	10
Waste Water Collection Buckets	10
Tap Buckets	10
Tissues	1,200
Neck Protector	880
Plastic Cups	528
Metal Spade	50
Hard Hat (Lightweight Helmet: PYR HP14010) *with inner part included	29
Face Shield Visor	29
Face Shield Bracket	29
Standard Glove: Length 19" (BES 747-8) Pair	98
Standard Glove: Length 19" (BES 747-9) Pair	319
Standard Glove: Length 19" (BES 747-10) Pair	311
Respiratory Mask with Exhalation Valve	620
Reusable Sanitary Napkins	292
Disposable Sanitary Napkins	200
Plastic Chairs	10
Plastic Tables	10
<b>Stationery</b>	
Scissors	20
Cello Tape	20
Staplers	34
Staples	10
Box Files	30
Pens	2,426

Description	Quantity/ Number
Note Books	1,500
Rubber Bands	9
Masking Tape	50
Visitors Book	10
Clear Page Protector (document wallet) A4 size	2,400
Clear Bags	1,000
Paper Reams	25
Flip Chart Pads	40
Flip Chart Stand	10
Meter Ruler	50
Permanent Markers (Box)	30
Calculators	10
File Dividers	20
Empty Boxes	300
Punching Machine	15
Fine Point Markers	10
Stapler Machine	10
<b>IT Equipment</b>	
Smartphones for mHealth activity	62
Tablets	10
Computer Laptop	31
APC smart UPS	3
Fans	5
Generators	2
Open Bookshelf	6
Office Desk	22
Office Chairs	22

# ANNEX C: JOB AID MESSAGES SENT TO SEASONAL STAFF

Time Sent	Recipient	Message	Total Number of Messages Sent During the Spray Campaign
1h30 PM	SOPs	Team leaders MUST carefully check the filled SOPs' data collection forms at the close of the day before submitting to the supervisors.	5
2h00 PM	Site managers, supervisors, AEHO	Ensure mobilizers notify the communities to prepare a day ahead of the arrival of the spray team.	6
9h00 AM	SOPs, supervisors, site managers, AEHO	Eating, drinking, or smoking during the spraying period will result in dismissal. It is not allowed.	6
7h00 AM	SOPs	Good morning! Remember the spray target is 12 structures per SOP per day. All rooms should be sprayed as well. Thanks for the good job.	5
1h30 PM	Site managers	#team members. #structures found. #structures sprayed. #Insecticide used <sup>3</sup>	32
6h30 AM	SOPs, supervisors, site managers, AEHO	Full PPE use remains mandatory for the duration of the spray operation.	5

<sup>3</sup> This was a reminder to send the PMT data at the end of the day.

Time Sent	Recipient	Message	Total Number of Messages Sent During the Spray Campaign
4h00 PM	SOPs	For tomorrow, remember only heavy, non-edible, bulky items should be packed in the center of the room and covered with the polythene sheet before spraying.	5
7h30	SOPs	Remember your spray nozzle should be 45cm from the surface. Spray pressure is between 35 and 55psi.	5
6h50 AM	SOPs, supervisors, site managers, AEHO	To ensure the safety of all seasonal staff and community, report the health status and any adverse effect to your supervisor.	6
15h00	SOPs, supervisors, site managers, AEHO, washers, security guards, pump technicians	VectorLink Project will not tolerate sexually oriented conduct, whether it is intended or not, that is unwelcome.	6
15h00	SOPs, supervisors, site managers, AEHO, washers, security guards, pump technicians	Sexual harassment is defined as: Sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature.	5
14h30 PM	SOPs, supervisors, site managers, AEHO, washers, security guards, pump technicians	Other related harassment is the unwelcome, deliberate solicitation of favors that are offensive, abusive, intimidating, hostile, denigrating, or demeaning.	5
14h30 PM	SOPs, supervisors, site managers, AEHO, washers, security guards, pump technicians	VectorLink Project takes any allegations of sexual harassment seriously. All complaints should be made to your <u>Gender Focal Point at 0999988304</u> .	5

Time Sent	Recipient	Message	Total Number of Messages Sent During the Spray Campaign
7h00 AM	Spray supervisors	Remember to fill in the supervisory checklists on CommCare and understand the questions appropriately before responding.	32
7h00 AM	SOPs, supervisors, site managers	Remember to remove all household items before spray starts, and removal of items is mandatory.	32
TOTAL MESSAGES		16	160

# ANNEX D. 2018 MALAWI IRS DATA COLLECTION AND VERIFICATION TOOLS

Data Collection Tool	Used by Whom and When
Training Participants Registration Form	Used by lead trainer at training workshop to capture category and number of people trained, disaggregated by sex.
Daily Mobilization Form	Used by mobilizers to record mobilization data, the form tracks the daily performance and output of each mobilizer. Data captured by the form includes: name of head of household, IRS card structure ID number, eligible structures sensitized, adults reached with IRS messages, acceptance of IRS and number of IEC/BCC materials distributed. The completed forms are verified by the IEC assistant and delivered to the nearest data center for entry into the VectorLink DHIS2 system in an accurate, efficient, and timely manner
IEC Supervision Form	Used by the IEC assistant to summarize mobilization activities within a community for both household mobilization and community meetings.
IRS Card	Used by mobilizers to capture household information during house-to-house mobilization. SOPs also use it to record the data for a house that was sprayed and who sprayed it. Data captured by the IRS cards includes: Name of head of household, date of mobilization, name of mobilizer, number of eligible structures, number of structures sprayed, date of spray signature of SOP, as well as the date of supervision and signature of the supervisor. It is used as a supervisory tool for staff members performing data quality assurance checks or general IRS programmatic activity monitoring.
Daily Spray Operator Form	Used by SOPs during spray operations to capture structures found, structures sprayed and not sprayed, population protected and not protected, rooms found and sprayed, gender of the household representative who was interviewed during the SOP's visit. The form tracks daily performance and output of each SOP. The form is completed by the SOPs and verified by the Team Leader, Spray Supervisor, and M&E Assistants, and delivered to the nearest data center to ensure spray data are entered into the VectorLink DHIS2 system in an accurate, efficient, and timely manner.
Daily Team Leader Summary Form	<p>Used by Team Leaders at the end of the spray day to compile all data from their SOPs. Like the Daily Spray Operator form, these also capture structures found, structures sprayed and not sprayed, population protected and not protected, and rooms found and sprayed.</p> <ul style="list-style-type: none"> <li>• These data are integrated with Error Eliminator questions to check the completeness and correctness of data collected in the field and identify quickly and highlight common data collection errors, make corrections, and provide re-training by the supervisor.</li> </ul>
IEC Supervision Form	Used by IEC Assistants and IEC Coordinator to understand how messages were delivered to the households, sensitization status of structures, and reasons for non-sensitized structures. It is a checklist that confirms: if the household received an IRS card for the structure, whether the household was sensitized, and if the household responded was aware of key IRS messages.
Directly Observed Spray Form	<ul style="list-style-type: none"> <li>• Used by the team leader during daily SOP supervision. It is a set of spray quality indicators. It provides a guide on what to check for during in-structure field supervision of spraying.</li> </ul>

Data Collection Tool	Used by Whom and When
<ul style="list-style-type: none"> <li>Data Collection Verification Form</li> </ul>	<ul style="list-style-type: none"> <li>Used primarily by M&amp;E assistants during field visits. The DCV focuses on verifying the details of a structure after it has been sprayed. This form is digitized and reported via CommCare. The common issue with DCV was underestimation of structures found; in some cases, SOPs were not recording unsprayed structures. The M&amp;E team provided correction regarding this error to SOPs, team leaders, and field supervisors through morning mobilization and during field supervision. The team emphasized that all eligible structures were part of the total structures found, whether locked or open. This issue was detected early in the spray campaign, thus allowing for corrective action and continuous follow-up during the campaign.</li> </ul>

# ANNEX E: MONITORING AND EVALUATION PLAN MATRIX – 2018 CAMPAIGN RESULTS

#	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 1: Implementation of Malaria Vector Control Interventions</b>														
1.1	Successfully execute IRS and other malaria vector control programs													
1.1.1	Number and percentage of complete annual country work plans developed and submitted on-time	Project records Annually	Country	1; 100%	1; 100%									
1.1.2	Number of eligible structures targeted for spraying	Project records Annually	Country	118,000	118,355									
1.1.3	Number of eligible structures sprayed with IRS	Project records Annually	Country	100,300 <sup>4</sup>	112,264									
1.1.4	Percentage of total structures targeted for spraying that were sprayed with a residual insecticide (Spray Coverage)	Project records Annually	Country	85%	94.9%									
1.1.5	Number of people protected by IRS	Project records Annually	Country Sex Pregnant women Children <5	408,308 <sup>5</sup>	501,324 Pregnant women: 11,066 Children <5: 90,953									

<sup>4</sup> Target based on 85% of estimated eligible structures in indicator 1.1.2.

<sup>5</sup> Target derived from recent HSA survey and represents 85% of total projected population in Nkhotakota District: 480,362.

#	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
1.1.6	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%								
1.1.7	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								
1.1.8	Number of insecticide-treated nets (ITNs) distributed, by channel	Project Records Annually	Country Channel	N/A	N/A								
1.1.9	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								
1.1.10	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								
1.1.11	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								
1.2	Provide technical assistance and planning support for IRS and other integrated malaria vector control activities												
1.2.1	Number of vector control project training workshops targeting NMCP and other host country staff	Project Training Records Annually	Country Technical Area Job Function	2 <sup>6</sup>	3 <sup>7</sup>								

<sup>6</sup> 1 TOT training; 1 Insecticide poison management training

<sup>7</sup> Master training, insecticide poison management training, environmental compliance

#	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
1.2.2	Number of NMCP and other vector control host country staff accessing DHIS2	DHIS2 Logs Annually	Country Job Function	2	0								
1.3	Ensure safe and judicious use of insecticides and other malaria vector control products												
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	628 <sup>8</sup>	641 <sup>9</sup> Female: 244; 38.1% Male: 397; 61.9%								
1.3.2	Number of health workers receiving insecticide poisoning case management training	Project Training Records Annually	Country Sex (# and %)	21	23 Female: 8; 34.8% Male: 15; 65.2%								
1.3.3	Number of adverse reactions to pesticide exposure documented	Incident Report Forms Annually	Country Type of Exposure	0	2 <sup>10</sup>								
1.4	Strengthen capacity of NMCPs, vector control personnel, and other institutions to implement and manage IRS and other vector control activities												
1.4.1	Total number of people trained to support vector control in targeted areas	Project Training Records Annually	Country Sex (# and %) VC Intervention Type	572 <sup>11</sup>	575 <sup>12</sup> Female: 218; 37.9% Male: 357; 62.1%								
1.4.2	Number of people trained during IRS Training of Trainers	Project Training Records Annually	Country Sex (# and %)	61	49 Female: 13; 26.5% Male: 36; 73.5 %								

<sup>8</sup> 400 SOPs; 80 team leaders; 40 supervisors; 40 drivers; 35 washers; 16 security guards; 9 storekeepers; 8 site managers

<sup>9</sup> 396 SOPs; 80 team leaders; 40 supervisors; 48 drivers; 41 washers; 17 security guards; 11 storekeepers; 8 site managers

<sup>10</sup> 1 exposure in Benga and 1 exposure in Dwangwa

<sup>11</sup> 528 SOPs and team leaders; 44 spray supervisors

<sup>12</sup> 526 SOPs and team leaders; 41 spray supervisors; 8 site managers

#	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
1.4.3	Total number of people hired to support vector control in target districts	Project Records Annually	Country Sex (# and %) Job Function VC Intervention Type	965	634 <sup>13</sup> Female: 256; 40.4% Male: 378; 59.6%								
1.4.4	Number of government/district officials who acted as supervisors during vector control campaigns	Project Records Annually	Country VC Intervention Type	7	14 <sup>14</sup>								
1.5	Promote gender equality in all facets of planning and implementation												
1.5.1	Number of women hired to support vector control campaigns	Project Records Annually	Country Returning female seasonal workers hired in a more senior capacity	338; 35%	256; 40.4%								
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	68 <sup>15</sup> ; 50%	48 <sup>16</sup> ; 35.3%								
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	998; 100%	567 <sup>17</sup> ; 87.1%								
1.5.4	Number and percentage of women in senior leadership roles in VectorLink country offices	Project Records Annually	Country Sex (# and %)	2; 50%	2 <sup>18</sup> ; 50%								
1.6	Implement and support social behavioral change communication and mobilization activities												
1.6.1	Number of radio spots and talk shows aired	Project Records Annually	Country VC Intervention Type	160	349 <sup>19</sup>								

<sup>13</sup> Includes: 396 SOPs; 80 team leaders; 40 spray supervisors; 8 site managers; 11 storekeepers; 41 washers; 17 security guards; 8 pump technicians; 18 data entry clerks; 8 M&E assistants; 6 finance assistants; 1 logistics assistant. 323 mobilizers/IEC assistants were engaged in supporting the IRS campaign, but were not formally hired due to their government employment.

<sup>14</sup> Includes: 1 from NMCP, 10 from DHO, 3 from District Council

<sup>15</sup> Supervisory roles include: supervisor, team leader, IEC assistant, site manager

<sup>16</sup> Supervisory roles include: 11 supervisors, 31 team leader, 2 site managers, 4 M&E assistants

<sup>17</sup> This includes 40 spray supervisor, 80 team leaders, 8 site managers, 8 M&E assistants, 18 data clerks, 396 spray operators and 17 permanent VectorLink staff.

<sup>18</sup> This includes the Chief of Party, Jennifer Burnett, and the Finance and Administration Manager, Tingo Mipando. There are a total of 4 senior leadership roles in Malawi.

#	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
1.6.2	Number of print materials disseminated	Project Records Annually	Country VC Intervention Type	118,000	75,316 <sup>20</sup>								
1.6.3	Number of people reached with vector control and/or IEC messages via door-to-door messaging	Project Records Annually	Country VC Intervention Type Sex	480,362	238,057 Female: 131,932; 55.4% Male: 106,125 44.6%								
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								
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								
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								
1.7	Environmental compliance												
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 <sup>21</sup> ; 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	17 <sup>22</sup> ; 100%	17; 100%								

<sup>19</sup> 344 radio spots; 5 radio talk shows

<sup>20</sup> 200 posters, 75,000 leaflets, 100 fliers, and 16 sexual harassment posters

<sup>21</sup> SEA was submitted 2 August 2018 and spray begun 2 October 2018.

<sup>22</sup> 9 fixed soak pits at 7 operations sites; 2 operations sites, Boma and Dwangwa, had two soak pits each; 5 operation sites had 1 soak pit each; 8 mobile soak pits were setup as PMSPs at Mkaika operations site – 4 per each of the two wash areas.

#	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
1.7.3	Number and percentage of storehouses inspected and approved prior to IRS campaigns	Project Records Annually	Country Storehouse Type	9 <sup>23</sup> ; 100%	10 <sup>24</sup> ; 100%								
1.7.4	Number and percentage of fixed soak pits that are compliant with PMI's Best Management Practices	Project Records Annually	Country	9; 100%	9 <sup>25</sup> ; 100%								
<b>2. Entomological and Epidemiological Data to Drive Decision Making</b>													
2.1	Vector control activities monitored via entomological and epidemiological data												
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	11; 100%	11; 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 and location)	Entomological Reports Annually	Country VC Intervention	1; 9%	ongoing								
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	11; 100%	ongoing								

<sup>23</sup> 1 central warehouse; 8 operations site storehouses

<sup>24</sup> 1 central goods warehouse + 1 central insecticide warehouse + 8 operations sites

<sup>25</sup> Number of soak pits by operations site: 2 Boma+ 1 Benga + 1 Mwansambo +1 Bua + 2 Dwangwa + 1 Dwambazi + 1 Lupachi

#	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	5; 100%	ongoing								
2.1.5	Number of wall bioassays conducted within 2 weeks of spraying to evaluate the quality of IRS	Entomological Reports Annually	Country	16 <sup>26</sup>	24 <sup>27</sup>								
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	16; 100%	14; 58.3%								
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	TBD; 100%	ongoing								
2.1.8	Number of vector susceptibility tests for different insecticides conducted in selected sentinel sites	Entomological Reports Annually	Country Insecticide Type	25 <sup>28</sup>	ongoing								
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								
2.1.10	Number of staff (VectorLink-contracted or non-VectorLink) trained in entomological monitoring	Project Training Records Annually	Country Sex (# and %) Job Function	2 <sup>29</sup>	ongoing								
2.2	NMCPs develop country-level IRS and other malaria vector control strategies												

<sup>26</sup> 4 communities X 4 houses/community

<sup>27</sup> First round of quality assessment carried out in 4 communities x 3 houses/community; 2nd round of quality assessment carried out in 4 additional communities x 3 houses/community.

<sup>28</sup> At least five insecticides to be tested at each of the 5 sites testing susceptibility; to be conducted in January-March 2019.

<sup>29</sup> Two, one from VectorLink Malawi, one from NMCP

#	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
2.2.1	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	1	ongoing <sup>30</sup>								
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								
2.2.3	Number and percentage of countries that implement sub-national insecticide rotation as part of an IRM strategy	Project Records Annually	Country	N/A	N/A								
2.3	Build capacity of NMCPs and local institutions to collect, analyze, and use data for strategic malaria control decision making												
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								
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								
<b>3. Procure insecticides for IRS and support the delivery and storage of IRS and other malaria vector control products</b>													
3.1	Cost-effective procurement mechanism established												
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	1; 100%	1; 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	1; 100%	1; 100%								

<sup>30</sup> IRM plan currently under development with VectorLink support.

#	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
3.1.3	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	1; 100%	1; 100%								
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%								
3.1.5	Number and percentage of countries with PPE procured according to workforce composition	Procurement Records Annually	Country	N/A	N/A								
3.2	Robust inventory management and logistics systems established												
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	10 <sup>31</sup> ; 100%	11 <sup>32</sup> ; 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	9 <sup>33</sup> ; 100%	10 <sup>34</sup> ; 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%								
<b>4. Innovation</b>													
4.1	Conduct operational research or monitoring to scale up new tools, methods, and approaches												

<sup>31</sup> 1 central warehouse manager; 1 logistics assistant; 1 district warehouse manager; 7 storekeepers

<sup>32</sup> 1 District warehouse manager; 1 logistics assistant; 9 storekeepers

<sup>33</sup> 1 central warehouse; 8 operations site warehouses

<sup>34</sup> 1 central goods warehouse + 1 central insecticide warehouse + 8 operations sites

#	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
4.1.1	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								
4.2	Create and share knowledge through dissemination of best practices and lessons learned												
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	TBD	0								
4.2.2	Number of individual members who use the Vector Learning Exchange	Project Records Annually	N/A	N/A	N/A								
4.2.3	Number of symposia and/or presentations submitted to and accepted at global conferences	Project Records Annually	Country Technical Area	TBD	1 <sup>35</sup>								
4.2.4	Number of success stories written or videos produced and shared on the VectorLink project website	Project Records Annually	Country	TBD	6 <sup>36</sup>								
4.2.5	Number of peer-reviewed journal articles submitted and accepted	Project Records Annually	Technical Area	TBD	0								
4.2.6	Number of critical guidance, standards, or plans that incorporate disseminated findings/best practices	Project Records Annually	Technical Area	TBD	0								
4.3	Develop and deploy cost-savings approaches												
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	TBD	0								

<sup>35</sup> VectorLink Malawi awaiting acceptance for an abstract submitted to the Women Deliver conference at time of reporting.

<sup>36</sup> 4 success stories and 2 Malaria Fighter Profiles at the time of reporting.

#	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
4.3.2	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	N/A	N/A								
4.4	Cultivate public-private partnerships												
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	TBD	0								

# ANNEX F: ENVIRONMENTAL MITIGATION AND MONITORING REPORT

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Mitigation Measure	Status of Mitigation Measures	Outstanding Issues Relating to Required Conditions <sup>37</sup>	Remarks
1. Pre contract inspection and certification of vehicles used for insecticide or spray team transport	The Malawi ECO, Ghana ECO, and District Coordinator inspected vehicles to be used during IRS operations to see if they met IRS standard requirements. A total of 41 vehicles hired to carry spray operators (39 minibuses and 2 land cruisers) and 7 trucks for carrying goods and insecticide were inspected and hired for the support of the IRS spray campaign operations. All the vehicles met VL requirements (insurance, Certificate of Fitness, driving license, fire extinguishers etc.) and were hired.	No outstanding issues.	
2. Driver training	48 drivers were trained on safety issues (including wearing coveralls while on IRS field operations). They all signed the PMI IRS Motor Vehicle and Driver Policy prior to the commencement of their work. In total, 586 inspections for transport vehicles were made.	No major outstanding issues.	Need for more support for the phone users so that they have a good understanding of the questions and the system. Most of the issues were erroneously reported as red flags.

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<sup>37</sup> On many occasions, the supervisors issued erroneous red flags due to their lack of familiarity with the system.

Mitigation Measure	Status of Mitigation Measures	Outstanding Issues Relating to Required Conditions <sup>37</sup>	Remarks
3. Cell phone, PPE, and spill kits on board for all insecticide transporting vehicles.	Drivers had cell phones, spill kits and PPE during transportation insecticide. They were also told to observe speed limits and vehicle capacity. During the 2018 spray campaign, only one vehicle accident was reported. Insecticide bottles fell off from a truck in transit when transporting IRS items for a demobilized site. The matter was immediately reported to the police and the missing empty bottles were recovered. (See summary of incident in Table 12.)	No outstanding issues.	Need to remind drivers to pay attention to vehicle preparation before transporting insecticide i.e. making sure all the items are well covered using tarpaulins and tight ropes.
4. Initial and 30-day pregnancy testing for female seasonal workers serving in roles with potential insecticide exposure	All female seasonal workers with potential exposure to insecticide were given pregnancy tests prior to spray and 30 days after the initial tests. All seasonal workers were found fit except 7 women (3 prior to spray and 4 during spray) who were found pregnant. All the seven pregnant women were assigned to mobilization duties in order to avoid insecticide exposure. Re-assigned pregnant women maintained their normal wages.	No outstanding issues.	The DHO officials conducted all tests and submitted results to VL.
5. Medical exams for all seasonal workers	A total of 585 seasonal workers were given medical exams by the DHO to ensure they were fit to support spray operations.	No outstanding issues.	The DHO officials conducted all exams and submitted results to VL.
6. Provision and distribution of PPE to seasonal workers; trainings on the use of PPE for all workers	PPE was issued to all seasonal workers with potential insecticide exposure. Trainings on the use of PPE, including dress rehearsals, were conducted for all seasonal workers. In some cases, coveralls required alteration and necessary arrangements were made. In total 166 red flags cases were reported out of the 8377 responses related to PPE use.	No outstanding issues.	Malawians are generally smaller in stature; in Year 2, coveralls and two piece work suits in smaller sizes will be ordered.

Mitigation Measure	Status of Mitigation Measures	Outstanding Issues Relating to Required Conditions <sup>37</sup>	Remarks
7. Training on mixing of insecticide and proper use and maintenance of spray pumps	Prior to the start of the spray campaign, all spray operators were trained on proper mixing of insecticide. Spray Operators were advised to triple rinse empty insecticide bottles. In total 2 red flag cases out of 2024 responses were made on insecticide mixing and triple rinsing of insecticide bottles.	No outstanding issues.	
8. End of day cleanup	Washing soap, water and other supplies were provided at every operations site to facilitate end-of-day clean-up. There were 802 smart phone-based end-of-day cleanup inspections completed during the campaign. No major issues were reported except on one occasion where a washer was splashed with the insecticide during the clean-up. (See summary of incident in Table 12.) Spray Operators and washers were reminded of the importance of putting on a full PPE and being mindful of their actions during clean up.	No outstanding issues.	VectorLink emphasized the requirement of Team Leaders properly supervising End of Day Clean-Up to ensure all protocols and safety measures were followed.
9. IEC campaigns to inform residents of responsibilities and precautions	The IRS IEC campaign was effectively carried through in person mobilization before and during the spray camping and through radio adverts and talk shows. In some cases, homeowners were reluctant to remove their household items due to the level of effort required. Spray Operators, TLs and Supervisors were able to explain to households the importance of removing items as well as assist homeowners with emptying their structures.	No outstanding issues.	
10. Two and half hour waiting period and exclusion from house after spraying	Spray Operators routinely informed residents that they must leave their homes closed for two hours and then open the doors and windows and wait another 30 minutes before entering and sweeping the structure.	No outstanding issues.	

Mitigation Measure	Status of Mitigation Measures	Outstanding Issues Relating to Required Conditions <sup>37</sup>	Remarks
11. Residents instructed to wash skin with soap and water after showing symptoms of insecticide exposure such as itchy skin	Out of the supervisory inspections conducted; no reports of itchy skin by the residents was reported after entering the houses; a single case was reported regarding insecticide exposure; the resident vomited following re-entry into the house after it was sprayed. (See summary of incident in Table 12.)	No outstanding issues	
12. Indoor spraying only	Supervisors emphasized the importance of indoor spraying only, the only exception was the spraying of eaves. There were no cases of spray operators spraying outdoor surfaces. Spray Operators were advised to put the pump on a plastic sheet when mixing the insecticide. Spray operators observed these requirements.	No outstanding issues	
13. Spray techniques	Spray operators were trained in spraying techniques. There were few cases of non-compliance. In such circumstances, the Spray Operators were closely monitored and given feedback to address issues. A total of 3,665 inspections of spray operator performance were conducted.	No outstanding issues	There is need to put more emphasis on spray techniques during training.
14. Insecticide Sprayers (Maintenance)	Each operations site had a pump technician to repair and maintain sprayers during the campaign. The pump technicians accompanied the spray teams to the field in order to assist with the fixing pumps problems such as leakages. The technicians were also responsible for periodic application of oil to the pumps.	No outstanding issues	Faulty pumps were in most cases repaired immediately in the field; no outstanding issues were reported. In order to ensure proper performance, calibration of all the pumps was also conducted.
15. Insecticide Sprayers (Care and storage)	During End of Day Clean-Up, every sprayer was cleaned and kept in the storeroom.	No outstanding issues.	Some red flags were submitted due to the fact that Goizper sprayers are not required to be hung upside down at the end of each day. Consider updating checklist so that lack of hanging Goizper Sprayers upside down does not trigger a red flag.

Mitigation Measure	Status of Mitigation Measures	Outstanding Issues Relating to Required Conditions <sup>37</sup>	Remarks
16. Choice of sites for disposal of IRS effluents	Liquid waste or effluent was disposed of in soak pits (FSP and PMSP). Since all the soak pits were newly constructed, no outstanding issues were reported except in Dwangwa where the two FSPs developed cracks due to the soil types and conditions. Tarpaulin was laid down to ensure no waste water got into the soil.	No outstanding issues.	Cement was used to seal the cracks and the entire wash area was covered with plastic sheeting.
17. Management of wash areas and soak pits and as required.	All the FSPs were located away from flood prone or water logged areas. In Mkaika, which is a flood prone area, PMSPs were used and removed after the campaign. Poor drainage was reported at Mwansambo operations site at the beginning of the spray campaign; this was caused by clogging along the effluent pipe. The clog was removed and proper effluent flow was restored. All soak pits and wash areas were closed down after spray; there were no outstanding issues reported for all the sites during the Post IRS EC inspections.	No outstanding issues.	Post-spray, all the soak pits were closed down. This involved removing PMSPs, locking FSPs with large metal covers, and covering wash areas with plastic sheets and a thin layer of soil to avoid exposure to animals and children.
18. Inspection of solid waste disposal sites before spray campaign	The ECO certified solid waste disposal sites before the spray campaign. These included sites for recycling, incineration, and landfilling. All the waste disposal sites were in good condition except the incinerator at the District Hospital which required maintenance. Maintenance was completed prior to the end of the spray campaign and there were no issues of concern.	No outstanding issues.	
19. Monitoring disposal procedures during the post IRS campaign	All IRS waste disposal was managed by the logistics team. The ECO assisted in post-IRS waste disposal planning and monitoring to ensure that waste was delivered to respective disposal sites in accordance with the recycling MOUs.	No outstanding issues.	IRS waste management and disposal requires the undertaking monitoring visits to the disposal sites such as recycling and incineration plants.

Mitigation Measure	Status of Mitigation Measures	Outstanding Issues Relating to Required Conditions <sup>37</sup>	Remarks
20. Maintain records of all issued and returned insecticide, including full and empty bottles.	During the campaign, 325 storekeeper performance inspections on warehouses were conducted on smartphone-installed checklists. Insecticide distribution forms tracked insecticide distribution down to the TL level. After a bottle of insecticide went missing at Bua operations site, Malawi VL introduced a form to track insecticide distribution down to the Spray Operators level.	No outstanding issues.	In Year 2, VectorLink will consider adopting the serial number system used in Kenya to track insecticide distribution.
21. Safety and security for warehouses	All the warehouses and storerooms were guarded 24/7 and had been fitted with fire extinguishers. No incidents related to burglary were reported; a small fire occurred at the Bua operations site. (See summary of incident in Table 12.) All washer and supervisors were reminded that it was against policy to burn waste at the sites.	No outstanding issues	

**NB:** PMI VectorLink Malawi made efforts to follow up on any red flags raised reported via the smartphone checklists. In most cases, the users indicated that there had made a mistake when completing the checklists. There was need to allocation more time for training on the various checklists and to better familiarize trainees with the smartphone system.

# ANNEX G: IRS INVENTORY

Description	Quantity Received	Quantity Used/Damaged/ Out of use	Quantity in Stock after the Campaign
<b>1. International Procurement</b>			
Insecticide (Actellic 300CS)	54,768	47,750 <sup>38</sup>	7,018
Sprayers (IK VC Super 7.50)	460	0	460
Tool to Tighten Chamber IK VC	5	0	5
Team Leader Kit 7.5 L	46	10	36
Pressure Regulator without Off (1178)	23	14	9
Complete Chamber IK VC Super (1183)	23	7	16
Complete Hose (1190)	23	3	20
Lance Tube (1177)	23	5	18
EVO Complete Handle (1179)	23	8	15
Activated Charcoal	222	37	185
Respirator Mask	20,520	18,962	1,558
Green Nitrile Chemical Glove	1,152	440	712
Long Glove (full-arm length)	96	25	71
Hard Hat	608	1	607
Face Shield Bracket	600	2	598
Face Shield (Visor)	600	589	11
Spray Operator Pocket Guide	1,000	641	359
Team Leader Pocket Guide	120	46	74
Store Keeper Pocket Guide	100	43	57
<b>2. Local Procurement</b>			
<b>Printing and Photocopying</b>			
Stock Cards	2,000	1,891	109
Goods Issued Note Book	250	45	205
Request Book	200	90	110
Goods Receipt Note	20	8	12

<sup>38</sup> This includes 47,743 used bottles, plus 5 bottles missing from Mkaika, 1 missing from Bua, and 1 damaged bottle.

Description	Quantity Received	Quantity Used/Damaged/ Out of use	Quantity in Stock after the Campaign
Spray Operator Form	25,000	23,500	1,500
Team Leader Form	4,500	4,500	0
Mobilizer Form	19,000	18,115	885
IRS Cards	164,800	162,575	2,225
Daily Health Team Leader Checklist	4,200	4,200	0
Vehicle Inspection Certificate	40	40	0
Spill Response Form	60	60	0
Material Safety Data Sheet	60	60	0
Emergency Response Procedure Form	60	60	0
Temperature Monitoring Sheet	20	20	0
Driver's Policy	60	60	0
Daily Summary Report for Site Managers	300	300	0
Insecticide Distribution card	300	300	0
Delivery Note Book	20	4	16
Store Commodity Ledger Book	25	15	10
Daily Mixed Insecticide Returned from field Tracking Form	2,400	2,400	0
Vehicle Daily Log Sheets	600	600	0
Photocopies of Assorted Documents	7,898	7,898	0
<b>Training Manuals</b>			
Training and Facilitation Skills for IRS	2	2	0
Approaches for Training IRS Seasonal Workers	2	2	0
Facilitator Guide for SOP's	8	8	0
Facilitator Guide for Storekeepers	2	2	0
Facilitator Guide for Team Leaders	8	8	0
Facilitator Guide for Health Workers	2	2	0
Facilitator Guide for Wash Person	8	8	0
Facilitator Guide for Security Guards	8	8	0
Facilitator Guide for Drivers	2	2	0
Facilitator Guide for Data Entry Clerks	2	2	0
Facilitator Guide for Community Mobilizers	8	8	0
Facilitator Guide for Pump Technicians	8	8	0

Description	Quantity Received	Quantity Used/Damaged/ Out of use	Quantity in Stock after the Campaign
<b>Communication Materials</b>			
USAID Stickers	1,000	1,000	0
IRS Posters	200	200	0
Banner for IRS Launch	1	1	0
Banners for IRS Operations sites	8	0	8
Long Banner for Promoting IRS	3	3	0
Gender Sexual Harassment Guidelines	8	8	0
PMI Logo Painted on Metal Sign Board for Central Warehouses and Operation Stores	10	2	8
Flyers	100	100	0
Leaflets	120,000	75,000	45,000
Performance Monitoring Tracker	8	0	8
Warning/Danger Signs	40	0	40
<b>Assorted Materials</b>			
Filter (Tea Strainer)/Sieve	440	46	394
Mops	20	20	0
Small Plastic Bucket with a cover(for spill kit)	50	12	38
Broom	20	20	0
Shovel	50	0	50
Barrel, 100 L	104	0	104
Barrel, 500 L.	10	0	10
Liquid Hand Washing Soap	20	0	0
Cloth line (Roll)	10	4	6
Chalk (Packets of 100 sticks)	220	216	4
Heavy Duty Brush	50	2	48
Jerry can 20 L	50	1	49
Megaphone	24	3	21
Detergent – Powder Soap	4,000	1,900	2,100
Towels	900	686	214
Polythene Sheeting (4m x 4m)	440	440	0
Bathing Soap	2,100	988	1,112
Yellow Chemical Apron (LIB1328)	72	1	71
Buckets (Metallic with Cover)	50	0	50

Description	Quantity Received	Quantity Used/Damaged/ Out of use	Quantity in Stock after the Campaign
Basin	135	3	132
Dust Pan for Spill Kits	50	0	50
Sisal Rope – cylinder roll, 80m length, 2mm diameter	10	2	8
Powder (talc/baby powder) tin	900	485	415
Lubricant oil, original 125ml (general purpose)	4,993	764	4,229
Empty sacs (100kg)	300	300	0
Toothbrush (for cleaning nozzles)	500	404	96
Stick cut (45 cm)	50	50	0
Stick cut (60 cm)	50	50	0
Stop Watch	50	2	48
Laundry Soap 250 g, bar	4,000	2,130	1,870
Flashlights (Small)	600	96	504
Flashlights (Large)	10	4	6
Bags for Mobilizers (Backpacks)	340	198	142
Bags for SOPs, team leaders and Supervisors (a.k.a. Haversacks)	528	10	518
Black PVC Knee Boots, Size 37	20	2	18
Black PVC Knee Boots, Size 38	88	6	82
Black PVC Knee Boots, Size 39	148	8	140
Black PVC Knee Boots, Size 40	140	7	133
Black PVC Knee Boots, Size 41	144	8	136
Black PVC Knee Boots, Size 42	72	4	68
Black PVC Knee Boots, Size 43	72	3	69
Black PVC Knee Boots, Size 44	36	1	35
Socks (Pair)	1,355	1,053	302
Whistle for Security Guards	20	5	15
Fire Extinguishers - CO2 and Dust Powder, Medium Size	20	0	20
Dustbin, Plastic	10	0	10
Measuring Cylinder	50	25	25
Digital Thermometers	15	4	11
Batteries for Digital Thermometers	15	10	5

Description	Quantity Received	Quantity Used/Damaged/ Out of use	Quantity in Stock after the Campaign
Dustbin (Sanitary)	10	0	10
Batteries (Small)	3,600	52	3,548
Batteries (Large)	2,266	1,981	285
Poly/Cotton Coveralls, Blue, Medium (M)	142	17	125
Poly/Cotton Coveralls, Blue, Large (L)	305	8	297
Poly/Cotton Coveralls, Blue, Extra Large (XL)	339	30	309
Poly/Cotton Coveralls, Blue, Extra Extra Large (XXL)	203	13	190
Poly/Cotton Coveralls, Blue, Extra Extra Extra Large (XXXL)	135	26	109
Poly/Cotton Top, Size S	136	9	127
Poly/Cotton Top, Size M	61	4	57
Poly/Cotton Top, Size L	34	3	31
Poly/Cotton Bottom, Size S	136	6	130
Poly/Cotton Bottom, Size M	61	1	60
Poly/Cotton Bottom, Size L	34	3	31
Reflective Vest	151	3	148
Screw Drivers	6	2	4
First Aid Kit	40	40	0
Pregnancy Test Kit	540	540	0
Urine Cup	540	540	0
Atropine Injection	120	120	0
Antibiotic Cream (Zylo-P)	50	50	0
Eyewash (Saline)	50	50	0
Paracetamol/ Aspirin (500mg (2x strips of 10)	50	50	0
Feminine Hygiene Pad Kits	250	250	0
MSP Buckets	10	10	0
MSP Carrier Buckets	10	10	0
Waste Water Collection Buckets	10	10	0
Tap Buckets	10	2	8
Tissues	1,200	580	620
Neck Protector	880	40	840

Description	Quantity Received	Quantity Used/Damaged/ Out of use	Quantity in Stock after the Campaign
Plastic Cups	528	248	280
Metal Spade	50	0	50
Hard Hat (Lightweight Helmet: PYR HP14010) *inner part included	29	0	29
Face Shield Visor	29	29	0
Face Shield Bracket	29	29	29
Standard Glove: Length 19" (BES 747-8) Pair	98	88	10
Standard Glove: Length 19" (BES 747-9) Pair	319	70	249
Standard Glove: Length 19" (BES 747-10) Pair	311	117	194
Respiratory Mask with Exhalation Valve	620	558	62
Reusable Sanitary Napkins	292	292	0
Disposable Sanitary Napkins	200	200	0
Plastic Chairs	10	6	4
Plastic Tables	10	0	10
<b>Stationery</b>			
Scissors	20	2	18
Cello tape	20	20	0
Staplers	34	18	16
Staples	10	10	0
Box Files	30	30	0
Pens	2,426	2,426	0
Note Books	1,500	1,500	0
Rubber Bands	9	9	0
Masking Tape	50	50	0
Visitors Book	10	10	10
Clear Protectors (document wallet) A4 size	2,400	2,400	0
Clear Bags	1,000	62	938
Paper Reams	25	25	0
Flip Chart Pads	40	40	0
Flip Chart Stand	10	1	9
Meter Ruler	50	50	0
Permanent Markers (Box)	50	50	0

Description	Quantity Received	Quantity Used/Damaged/ Out of use	Quantity in Stock after the Campaign
Calculators	10	1	9
File Dividers	20	20	0
Empty Boxes	300	300	0
Punching Machine	15	6	9
Fine Point Markers	10	10	0
Stapler Machine	10	2	8
<b>IT Equipment</b>			
Smartphones for mHealth activity	62	62	62
Tablets	10	0	10
Computer Laptop	31	0	31
APC smart UPS	3	0	3
Fans	5	0	5
Generators	2	0	2
Open Bookshelf	6	0	6
Office Desk	22	0	22
Office Chairs	22	0	22