PMI | Africa IRS (AIRS) Project

Indoor Residual Spraying (IRS 2) Task Order Six

2017 MALI
END OF SPRAY REPORT

SPRAY CAMPAIGN:
JULY 24 – AUGUST 27, 2017

Recommended Citation: PMI | Africa IRS (AIRS) Project Indoor Residual Spraying (IRS 2) Task Order Six. *2017 Mali End of Spray Report*. Bethesda, MD: Abt Associates.

Contract: AID-GHN-I-00-09-00013

Task Order: AID-OAA-TO-14-00035

Submitted to: The United States Agency for International Development/President's Malaria Initiative

Prepared by: Abt Associates Inc.

Submitted: October 11, 2017

Re-submitted: November 20, 2017

Approved: December 21, 2017

Abt Associates Inc. | 4550 Montgomery Avenue | Suite 800 North
| Bethesda, Maryland 20814 | T. 301.347.5000 | F. 301.913.9061
| www.abtassociates.com

2017 MALI
END OF SPRAY REPORT

Spray Campaign:
July 24 – August 27, 2017

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS

AIRS	Africa Indoor Residual Spraying Project
ASACO	Community Health Association (*Association de Santé Communautaire*)
CAFO	Coordination of the Women's Associations and NGOs
CEMAS	CEM Analytical Services
COP	Chief of Party
DNACPN	National Directorate for Sanitation and Pollution Control (*Direction National de l'Assainissement, Contrôle de Pollution et de Nuisances*)
DOS	Directly Observed Spraying
DTC	Health Center Technical Director (*Directeur Technique de Centre de la Santé*)
ECO	Environmental Compliance Officer
IEC	Information, Education, and Communication
IRS	Indoor Residual Spraying
MIS	Malaria Indicator Survey
M&E	Monitoring and Evaluation
MOE	Ministry of Environment
MOH	Ministry of Health
MSP	Mobile Soak Pit
NMCP	National Malaria Control Program
OP	Organophosphate
PID	Pulvérisation Intra Domiciliaire
PMI	President's Malaria Initiative
PNLP	Programme National de Lutte Contre le Paludisme
PPE	Personal Protective Equipment
PSECA	Pre-Season Environmental Compliance Assessment
SEA	Supplemental Environmental Assessment
SOP	Spray Operator
USAID	United States Agency for International Development
WHO	World Health Organization
WHOPES	World Health Organization Pesticide Evaluation Scheme

EXECUTIVE SUMMARY

The President's Malaria Initiative (PMI) has been funding indoor residual spraying (IRS) in Mali since 2008 with the aim of reducing the malaria burden, especially among children under five years and pregnant women. In August 2011, Abt Associates was awarded the three-year Africa Indoor Residual Spraying (AIRS) project, funded by the United States Agency for International Development (USAID) under PMI. In September 2014, Abt Associates was awarded another three-year project, called The PMI AIRS Project (or "the project") to implement IRS in up to 20 African countries, including Mali. The objective of the project is to limit exposure to malaria and reduce its incidence and prevalence.

In 2017, PMI shifted IRS operations from the districts of Koulikoro, Baroueli, and Fana in the South to Mopti region based on data from a 2015 study showing the malaria prevalence rate in this region was 60%, compared to 30% nationally. In addition, Mopti region does not benefit from the same level of malaria control resources as other areas.

The objective of AIRS Mali in 2017 was to reduce malaria-associated morbidity and mortality in Mopti, Bandiagara, Bankass, and Djenne districts by spraying 251,086[1] structures (82,272, 104,131, 27,011 and 37,672 respectively). AIRS Mali implemented all activities with the involvement of the Malian Government at different levels. Highlights are shown in Table ES-1 below.

Key lessons learned from the 2017 IRS campaign include:

- The need for better communication with the districts from which IRS was withdrawn to ensure a common understanding of why they were not receiving IRS and what other malaria control interventions were available to them.
- Mopti region, the new IRS intervention area, requires robust preparation and engagement of all stakeholders at all levels; from the national level to the village level.
- The communication chain must be very clear and known to all relevant stakeholders during the IRS campaign, as well as in the preparatory and post-campaign phases, especially in the context of ever-changing circumstances of insecurity.
- Radio broadcasts combined with live "call-in shows" were effective strategies for raising awareness and fighting rumors.
- The use of the WhatsApp application made it possible to disseminate information to spray personnel at different levels of any urgent security situations, helping to ensure the protection of spray teams.
- The many years of experience of the project team was instrumental in the successful transfer of all IRS activities to four new districts in the Mopti Region.

[1] The original target in the workplan was 306,673 structures. As a result of the enumeration exercise, the target was adjusted to 257,113 structures, protecting a population of 1,104,086. After twelve villages in Mopti, which are located north of the Niger River, and two villages in Djenne, were excluded due to security concerns, the IRS campaign target was further adjusted to 251,086 structures, protecting an estimated 1,074,162 people.

TABLE ES-1: AIRS MALI AT A GLANCE

Number of districts covered by PMI-supported IRS in 2017	4 districts: Mopti, Bandiagara, Bankass and Djenne
Insecticide	Organophosphates (Actellic 300 CS) in all districts
Number of structures found by spray operators	239,350
Number of structures sprayed by spray operators	227,646
2017 spray coverage	95.11%
Population protected by PMI-supported IRS in 2017	823,201 (23,496 pregnant women and 131,477 children under five)
Dates of PMI-supported IRS campaign	July 24–August 27, 2017
Length of campaign (operational days)	30 days
Number of people trained with U.S. Goverment funds to deliver IRS*	1,038

*Based on the PMI indicator definition. It includes only spray personnel such as spray operators, team leaders, supervisors, and clinicians. It excludes data clerks, Information, Education and Communication mobilizers, drivers, washers, porters, pump technicians, and security guards.

RESUME (EN FRANÇAIS)

L'Initiative du Président Américain contre le Paludisme (President's Malaria Initiative: PMI) a commencé à financer la Pulvérisation Intra Domiciliaire (PID) depuis 2008 avec le but de réduire le fardeau du au Paludisme spécialement au sein des Enfants de moins de 5 ans et des femmes enceintes. En Aout 2011, Abt Associates a obtenu le projet Africain de PID pour 3 ans financé par l'Agence des Etats Unis pour le Développement International (USAID) sous PMI, pour mener à bien le travail. En Septembre 2014, Abt Associates a reçu trois ans complémentaire pour continuer le projet appelle PMI AIRS Project et assure la mise en œuvre de la PID dans 20 pays d'Afrique incluant le Mali. L'objectif de PMI AIRS Project est de limiter l'exposition au Paludisme et en réduire l'incidence et la Prévalence.

En 2017, PMI a transféré les opérations IRS des districts de Koulikoro, Baroueli et Fana dans le Sud vers la région de Mopti suivant une étude conduite en 2015 montrant que le taux de paludisme dans cette région était de 60%, contre le niveau national de 30%. De plus, la région de Mopti ne bénéficie pas du même niveau de ressources de contrôle du paludisme que d'autres zones.
Les objectifs de AIRS Mali en 2017 étaient de réduire les taux de morbidité et de mortalité lies au Paludisme dans les Districts sanitaires de Mopti, Bandiagara, Bankass and Djenne districts en aspergeant 251 086[2] structures (82 272, 104 131, 27 011 and 37 672 respectivement).

PMI AIRS Mali a mis en œuvre toutes ces activités avec la pleine implication du Gouvernement Malien à tous les niveaux. Les résultats sont présentés dans le tableau ci-dessous (Table ES-2).

Les principales leçons tirées de la campagne PID 2017 sont les suivantes:

- Il aurait fallu une meilleure communication avec les districts d'où la PID a été retiré pour assurer une compréhension commune des raisons pour lesquelles ils ne recevaient pas le SRI et des autres interventions de lutte contre le paludisme qui leur étaient disponiblesLa nouvelle zone vers laquelle les activités PID sont transférées a besoin d'une bonne préparation et une bonne implication de toutes les parties prenantes à tous les niveaux ; depuis le niveau national jusqu'au niveau village.
- La chaine de communication doit être bien claire et connu de tous au cours d'une campagne PID et surtout dans un contexte d'insécurité, même si le projet sait que la situation sécuritaire n'est pas une donne figée.
- Les émissions radiophoniques combinées aux "questions-réponses" téléphoniques sont des appuis importants pour la sensibilisation et la lutte contre les rumeurs.
- L'utilisation du Groupe WhatsApp a permis d'informer les acteurs de la PID à plusieurs niveaux des situations urgentes du point de vue sécuritaire, pour assurer la protection des équipes
- La longue expérience de l'équipe du projet a rendu facile le transfert des activités de la PID vers la Région de Mopti.

TABLE ES-2: AIRS MALI EN BREF

[2] La cible initiale du workplan était de 306 673 structures. À la suite de l'énumération de la zone, la cible a été ajustée à 257 113 structures, protégeant une population de 1 104 086 personnes. Après douze villages de Mopti situés au nord du fleuve Niger et deux villages de Djenné ont été exclus pour des raisons de sécurité, l'objectif de campagne de l'IRS a été ajusté à 251 086 structures, protégeant ainsi 1 074 162 personnes.

Nombre des districts sanitaires couverts par PMI en 2017	4 districts sanitaires: Mopti, Bandiagara, Bankass and Djenne
Insecticide utilisé pour la PID	Organophosphorés (Actellic 300 CS) dans les 4 districts
Nombre de structures trouvées par les Opérateurs.	239 350
Nombre de structures pulverisées par les opérateurs en 2017	227 646
Taux de couverture de la PID 2017	95,11%
Population protegée par PMI en 2017	823 201 (23 496 femmes enceintes et 131 477 enfants de moins de 5 ans)
Dates de la campagne financée par PMI	24 Juillet au 27 Aout 2017
Durée de la campagne (jours opérationnels)	30 jours
Nombre de personnes formées avec les fonds du Gouvernement des Etats Unis d'Amerique pour faire la PID*	1 038

* En se basant sur la définition des indicateurs de PMI. Ce chiffre inclut seulement les acteurs comme les Opérateurs, les Chefs d'Equipe, les Superviseurs, et les Cliniciens. Il exclut les agents de saisie, les mobilisateurs, les Chauffeurs, les lingères, les maintenanciers, et les gardiens.

1. BACKGROUND

The President's Malaria Initiative (PMI) has supported indoor residual spraying (IRS) in Mali since 2008, initially through IRS programs in Bla and Koulikoro districts. In 2011, PMI added support for Baroueli district, thus making the IRS-supported area geographically continuous. In 2012 and 2013, PMI continued spraying in the three districts with a carbamate class insecticide (bendiocarb). However, the results from 2013 monthly monitoring indicated that bendiocarb was short lived in the IRS districts, particularly Baroueli. In 2014, due to observed short residual life (two months) of this insecticide, PMI switched to a long-lasting organophosphate (OP) insecticide (pirimiphos methyl, Actellic 300 CS) in Baroueli and Bla districts, and continued to use bendiocarb in Koulikoro. In 2015, PMI and the National Malaria Control Program (NMCP) agreed to switch to an OP insecticide (Actellic 300 CS) in all districts. However, due to the high cost of the new insecticide and NMCP's planned implementation of a universal net coverage campaign in Bla district, only Baroueli and Koulikoro were targeted for IRS in 2015.

In 2016, Mali received support from the Next Generation Indoor Residual Spraying (NgenIRS) project, funded by UNITAID, which provides eligible countries with a co-payment on the price of long-lasting insecticides. As a result of the lower price of insecticide, as well as additional funding from PMI, AIRS Mali was able to spray one additional district (Fana) in addition to Koulikoro and Baroueli in 2016.

In 2017, the AIRS Project sprayed in four districts in the Mopti Region (Bandiagara, Bankass, Djenne and Mopti) as shown in Figure 1. The decision to relocate IRS activities was taken in October 2016 by NMCP and PMI and was based on data from a Malaria Indicator Survey (MIS) done in 2015, which showed the prevalence of malaria in the Mopti Region was 60% while the average prevalence in other regions was at 30%.

The following actions were taken in preparation for the relocation to Mopti Region:

- Meeting with the governorate and all administrative, technical, and security authorities of the Mopti region to introduce IRS.
- Meeting with the Regional Directorate of Health and Social Development of Mopti to select the areas to be covered, especially taking into account safety and accessibility. Ultimately, 53 health areas were selected (out of 98 total) in four districts: Bandiagara (19 out of 27), Bankass (5 out of 22), Djenne (9 out of 22) and Mopti (20 out of 27).
- Meeting with district officials and community leaders, including: doctors, heads of districts, heads of social development services, sub-prefects, mayors, community health associations and technical directors of community health centers.
- After these steps were completed, the AIRS Mali team undertook the following preparatory activities for the 2017 IRS campaign in the new districts:
    - Geographical reconnaissance
    - Central warehouse negotiation
    - Relocation of equipment and materials from the old districts
    - Enumeration
    - Pre-Campaign Environmental Compliance Inspection (identification of sites and the negotiation of secondary stores)

- Procurement of personal protective equipment (PPE) and insecticide
- Micro-planning
- Selection of spray personnel
- Training of spray personnel
- Pre-campaign community mobilization

- The campaign started on July 24th, 2017, in 53 functional health areas out of 98 total (54%).The insecticide used is the Actellic 300 CS, to ensure that the sprayed surfaces would retain their efficacy through the peak malaria transmission season in September and October. The start of the 2017 IRS campaign coincided with the start of the rainy season which presented challenges in transportation and spraying.

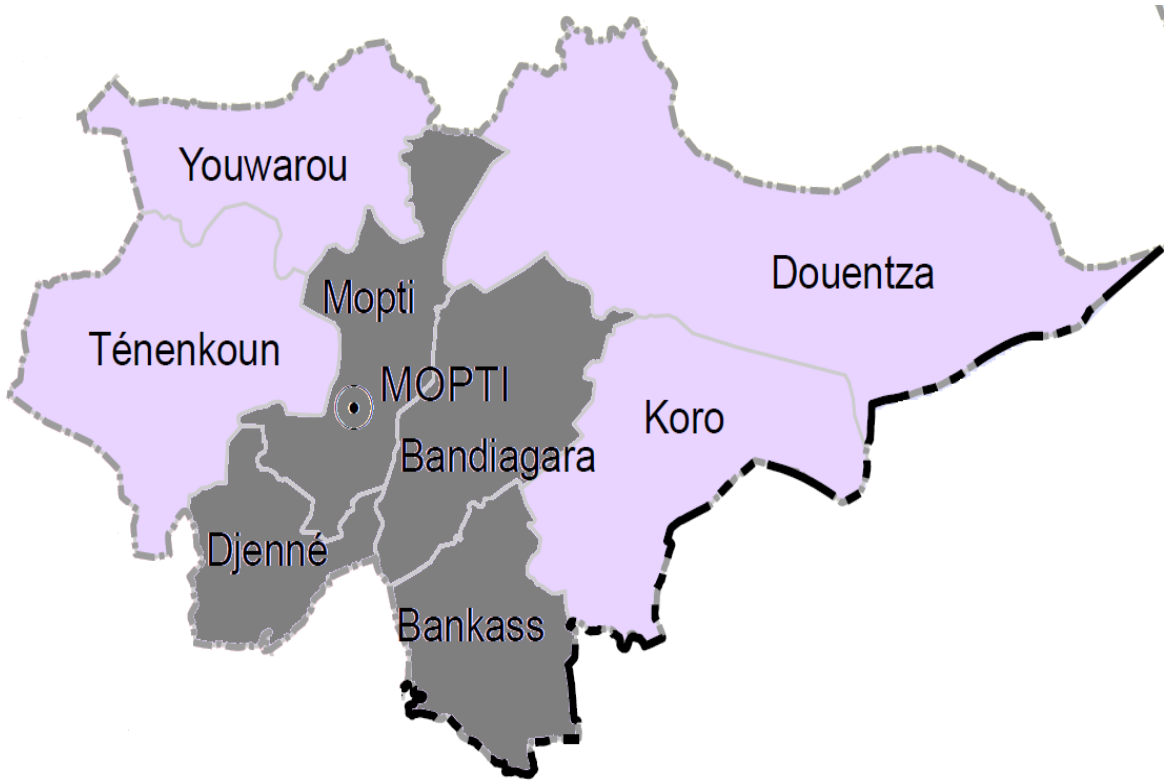


FIGURE 1: 2017 IRS CAMPAIGN DISTRICTS: BANDIAGARA, BANKASS, DJENNE, AND MOPTI

1.1 2017 IRS CAMPAIGN OBJECTIVES

As stated in the 2017 work plan of the PMI AIRS project in Mali, the program's objectives in 2017 were to:

- Cover at least 85 percent of eligible structures in 53 selected health areas (in four districts) and protect an estimated population of 1,074,162[3].
- Promote participatory implementation by the Ministry of Health (MOH) and NMCP at all levels during the relocation and the implementation of IRS operations in the four districts.
- Continue developing national and local capacity in organizing, planning, implementing, and evaluating IRS campaigns.
- Support orientation and dissemination workshops regarding the application of national IRS strategic documents to the sub-regional levels.
- Complete quality entomological monitoring for the 2017 IRS campaign and collect data on insecticide resistance to inform insecticide selection for the 2018 spray campaign.
- Support orientation and dissemination workshops regarding the application of national IRS strategic documents to the sub regional levels.

1.2 2017 Results Summary

The following results respond to the 2017 objectives listed in Section 1.1:

- By the end of the 2017 spray campaign, AIRS Mali achieved 95.11 percent coverage (227,646 structures sprayed out of 239,350 found) protecting 823,201 people in the four districts.
- The project worked closely with government counterparts: four district- and national-level partners were involved in planning and scheduling of the IRS roll-out and sensitization of communities.
- AIRS Mali completed the post-spray meetings with the communities, and technical and administrative leaders in four districts.
- AIRS Mali conducted spray quality tests that indicated almost 100 percent mortality after spraying and continued to collect monthly data on insecticide residual life.

[3] 920,021 was estimated number of people in the original 306 673 structures targeted in the work plan, but after adjusting the targets and removing the insecure villages, the number of people was 1,074,162.

2. PREPARATION FOR IRS CAMPAIGN

2.1 IRS CAMPAIGN PLANNING

The following activities were undertaken to plan and organize the 2017 IRS campaign:

- Relocation: As described in the previous chapter, per PMI and the NMCP's decision in October 2016 to relocate IRS activities to Mopti District, AIRS Mali moved all equipment (pumps, PPE, etc.) and leftover insecticide from the central warehouses of Segou and Koulikoro to the central warehouses of Sevare and Bankass.
- Meeting with Community Leaders in Bankass, Djenne, Mopti and Bandiagara (November–January): Meetings with community leaders included discussions regarding the dates for the IRS campaign and introductions to new approaches to implement IRS.
- Meetings with Local Partners (November–January): The project held meetings with Sub-Prefects, Mayors, Community Health Associations and Technical Directors of Community Health Centers and the Chief of villages throughout the spray districts to ensure that communities were aware of the dates for IRS campaign implementation and to establish the roles and commitments of Community Health Association (ASACO) and Health Center Technical Directors (DTCs) in implementing the campaign.
- Internal IRS Campaign Planning (January–June): In January, the AIRS Mali team began detailed planning for all activities of the IRS campaign. AIRS Mali staff met regularly to review the progress with campaign organization and planning. At the meetings, the team discussed revising training programs and materials, and setting standards for the campaign. AIRS Mali inventoried IRS equipment and commodities leftover from the 2016 campaign, and then did local and international procurement of goods needed for successful implementation of the 2017 campaign.
- Meeting with IRS Steering Committee (March): All activities were planned and implemented in collaboration with government technical partners (NMCP, National Directorate for Sanitation and Pollution Control (DNACPN), Ministry of Environment (MOE), Ministry of Agriculture, and other government and non-government stakeholders) at the national, regional, district, and community levels. At the steering committee meeting, all key partners agreed on their roles as well as objectives, targets, and needs for the spray campaign.

2.2 INSECTICIDE SELECTION AND PROCUREMENT

Based on entomological monitoring and insecticide resistance results after the 2016 IRS campaign, insecticide from the OP class (Actellic 300 CS) was selected for spraying in the 2017 IRS campaign. AIRS Mali calculated that 111,780 bottles of Actellic 300 CS would be needed to cover the original target of 306,673 structures in the four spray districts in addition to 10,889 bottles of Actellic 300 CS left over from the 2016 campaign. The total quantity of Actellic 300 CS procured was 111,792 bottles. The difference between calculated and ordered quantity is due to packaging of the product. The Actellic 300 CS arrived in Mali in June after Abt Associates had successfully tested the quality of the insecticide at CEM Analytical Services (CEMAS), a UK-based independent laboratory.

On November 4, 2016, a meeting was held with the regional health directorate to share the population data of the new intervention zones. These data allowed us to estimate the number of target structures

at 306,673, which is in the work plan and was used to quantify the insecticide ordered at the beginning of February 2017. It was only in May, after the final district was enumerated, that we received the final figures of the number of structures, after it was too late to change the order.

2.3 Logistics Planning and Procurement

2.3.1 Inventory Assessments and Procurement

Prior to the spray campaign, AIRS Mali did a full inventory in both Central Warehouses, located in Sevare for Mopti and Djenne districts and in Bankass for Bandiagara and Bankass districts. Using the inventory results and needs assessed for the 2017 campaign, AIRS Mali initiated requests for international procurement to the Home Office and completed local, in-country procurement. Local procurement involved an open, competitive tendering process. The AIRS Mali procurement committee selected suppliers based on the lowest-cost, technically acceptable bid according to the criteria given in the solicitation for the quotations. The tables in Annex A include a detailed list of items procured locally and internationally and the post-campaign balance.

2.3.2 Logistical Needs Assessments

During the internal planning meetings, the AIRS Mali team developed the logistics and commodity distribution schedules for the 2017 IRS campaign. In May and June, the operations manager, logistics coordinator, and environmental compliance officer (ECO) visited all 53 operational sites and finalized the plans for moving IRS commodities to each site from June 28th to July 7th, 2017. Table 1 shows the quantities of key IRS commodities distributed to each district for the spray campaign, and Table 2 shows the vehicle distribution. Annex B includes details of vehicle usage in four districts in 2017.

TABLE 1: DISTRIBUTION OF SELECTED IRS COMMODITIES TO OPERATIONAL SITES

Operation Sites	Number of Teams	Overalls	Boots (Pair)	Helmets	Spray Pumps	Gloves	Masks / Respirators
Mopti	75	998	487	283	323	487	14,598
Djenne	36	379	205	149	131	205	6,138
Bandiagara	77	933	473	371	326	473	14,181
Bankass	23	290	161	161	86	161	4,830
Total	**211**	**2,600**	**1,326**	**964**	**866**	**1,326**	**39,747**

TABLE 2: DISTRIBUTION OF VEHICLES

District	Minibuses[4]	Hard-top 4x4[5]	Pick-up 4x4[6]	Taxini[7]	Motorbike (2 tires) [8]
Mopti	7	8	2	75	172
Djenne	3	3	3	11	11
Bandiagara	10	9	3	20	258
Bankass	5	0	3	5	0
Total	**25**	**20**	**11**	**111**	**441**

2.4 HUMAN RESOURCES

To implement the 2017 IRS campaign, AIRS Mali hired 1,494 seasonal staff, including 1,215 men and 279 (18.67%) women. Table 3 provides a breakdown of the seasonal staff by position and gender.

TABLE 3: SEASONAL STAFF HIRED IN 2017, BY POSITION AND GENDER

Position	Men	Women	Total
District logisticians	4	0	4
Data clerks	5	19	24
Pump mechanics	14	0	14
District warehouse managers	2	0	2
Finance assistants	1	0	1
IRS data transporters	12	0	12
Spray operators	659	101	760
Community supervisors	47	6	53
Team leaders	150	22	172
Storekeepers	39	14	53
Washers	0	113	113
Entomological technicians	13	2	15
Security guards	102	2	104
Drivers	167	0	167
Total	**1,215**	**279**	**1,494**

A committee was set up in each of the 53 health areas to select and recruit seasonal workers. Each committee was composed of the Sub-Prefect (president of the committee and representative of the prefect), the mayor, the DTC, the President of the ASACO, and the village chief. The AIRS team verified the selection criteria and qualifications of selected personnel prior to hiring them.

The selection committee in each spray area recruited spray operators (SOPs), team leaders, pump mechanics, and washers based on criteria the AIRS Mali technical team developed. Hiring criteria for SOPs included: 1) ability to read and write, 2) ability to carry spray pumps for several hours per day, and

[4] Minibuses are specifically used in flat geographical field areas for spray operator (SOP) transportation with more or less standard road accesses

[5] Hard-tops are used specifically in accident-prone geographical field areas for SOP and Supervisors (Project and partners).

[6] Pickups are used for supervision and dispatch transport of insecticide and others commodities.

[7] Taxinis are three-wheeled vehicles with a motorbike incorporated, cheaper and more flexible for use in geographical areas with narrow road access for SOP transportation.

[8] Motorbikes (2 wheels) are required in very narrow roads where the other transportation commodities are practically unusable: 1 SOP for 1 motorbike.

3) having a certified note from a doctor stating that the candidate was in good health. The DTCs gave all SOPs a medical exam at the health post, a process closely supervised by AIRS. Women applicants also

FIGURE 2: SPRAY OPERATORS TEAM

had to present a note from the doctor stating that they were not pregnant.

A team of SOPs hired to spray in Bankass District.

A team of SOPs hired to spray in Djenne District.

2.5 TRAININGS

AIRS Mali held 13 different trainings to ensure that all seasonal staff were aware of their roles, understood how the IRS campaign would function, and had the technical knowledge and skills to perform their jobs well. Additionally, the trainings covered what to do in emergency situations (such as insecticide poisoning), and reinforced the value of preventing malaria transmission. Brief descriptions of trainings are in Annex C.

All the trainings were implemented with the support and involvement of government technical partners. The trainings took place between June 20th and July 20th, 2017, pictured below in Figures 3 and 4. As

FIGURE 3: ORIENTATION MEETINGS

shown in Table 4, AIRS Mali trained 3,033 people in total, 733 (24.16%) of whom were women.

Orientation Meetings in Irely (left) and De (right) in Bandiagara health district.

FIGURE 4: TRAINING ENUMERATORS

Training Enumerators in Bankass District, April 2017.

TABLE 4: SEASONAL STAFF TRAINED, BY TOPIC AND GENDER

Categories of Persons Trained	Training on IRS Delivery								Other Trainings																		\Total
	Training of Trainers		Spraying Operations		Intoxication Management		Supervisors Training		Data clerks Training		Logistics Training		Washing Training		Enumeration Training		Transport safety and security		Store security Training		Logistics Training		Entomology Training		IEC Training		
	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	
DTCs	45	8																									53
District coordinators	4	0																									4
*Spray operators			659	101																							760
*Team leaders			150	22																							172
*Clinicians					45	8																					53
*Community supervisors							47	6																			53
Data clerks									5	19																	24
Storekeepers											39	14															53
Washers													0	113													113
Enumeratorss															1,011	433											1,444
Drivers																	167	0									167
Security guards																			102	2							104
District logisticians																					4	0					4
Warehouse keepers																					2	0					2
Entomologist technicians																							13	2			15
Radio hosts																									12	0	12
TOTAL M/F District	49	8	809	123	45	8	47	6	5	19	39	14	0	113	1,011	438	167	0	102	2	6	0	13	2	12	0	3,033
Total Trained	**57**		**932**		**53**		**53**		**24**		**53**		**113**		**1,444**		**167**		**104**		**6**		**15**		**12**		**3,033**

*Based on the PMI indicator definition. It includes only spray personnel such as spray operators, team leaders, supervisors, and clinicians. It excludes data clerks, Information, Education and Communication mobilizers, drivers, washers, porters, pump technicians, and security guards.

3. COMMUNICATIONS AND ENUMERATION

AIRS Mali completed the following communication activities in 2017:

- Community Mobilization

  The Project entrusted the DTCs to identify the best mobilizers in each village among those with whom they are used to working in other health domains.

  Information, Education, and Communication (IEC) activities mobilization began 20 days prior to the campaign with radio announcements and community meetings. In 2017, AIRS Mali hired formal mobilizers. Additional, field supervisors, village chiefs, and public criers were responsible for mobilizing the communities before and during the campaign. One day before the arrival of the spray team, the field supervisor or the DTC called the village chief and mobilizers to advise him of the arrival. After, they inform or announce the news to the community. AIRS Mali complemented this with announcements on community radio stations, which continuously broadcast the spray schedule to the different villages.

- Radio Broadcasts

  Because radio is widely available and listened to in the spray districts, AIRS Mali used radio broadcasts to ensure wide dissemination of IRS spray campaign information. AIRS Mali worked with 12 local radio stations to broadcast 7,560 radio spots in French, Bambara, Fulfulde and Dogosso to promote the IRS campaign. Radio programs were also broadcast with announcements about the spray schedule, call-in shows, and live interviews with AIRS Mali and District Health Center staff, DTCs, community leaders, spray campaign beneficiaries, and SOPs during the spray campaign.

- Enumeration in the four Health Districts:

  To collect reliable data on structures targeted for spraying in the four completely new spray districts in Mopti, AIRS Mali carried out structure enumeration in the four target districts from February to April 2017. Prior to data collection, the project team had organized sensitization meetings with community leaders and members. The project also selected seasonal personnel for enumeration with the understanding that the same people would apply for SOP positions. Bringing people on board earlier increased the understanding and importance of the IRS program among the seasonal personnel and their communities.

  The DTC of all districts played the role of facilitator. The project held training for enumerators from February 9 to March 7, 2017, and enumeration of the 53 health areas took place over the following 10 days. The team cleaned the data by mid-May and produced the following results.

  Number of population: 1,104,086;

  Number of eligible structures: 257,113

  The results differed from the targets estimated in the work plan because the project had used data from the secondary sources when doing the plan, and those data were not up to date.

  Enumeration has helped the project determine the correct number of population, compounds, and structures to be targeted. With these data, AIRS Mali was able to develop more detailed and localized calendars for distribution and supply spray campaign operations.

4. IMPLEMENTATION OF IRS ACTIVITIES

4.1 SPRAY CAMPAIGN

The 2017 IRS campaign was completed in 30 operational days over a period of 35 calendar days, from July 24 through August 27, 2017. AIRS Mali deployed a total of 172 spray teams from 53 sites. The distribution of spray teams was determined by the number of eligible structures per district and the geography/terrain that the spray teams would cover in 30 days (Table 5).

TABLE 5: DISTRIBUTION OF SPRAY TEAMS BY DISTRICT

District	No. of Spray Teams	No. of Eligible Targeted Structures
Bandiagara	64	104,131
Bankass	17	27,011
Djenne	27	38,396
Mopti	64	87,575
Total	**172**	**257,113**

Considering the architecture of Mopti and Djenne, logistical planning estimated that each operator would spray 9 structures per day in those districts, as opposed to Bandiagara and Bankass where SOPs were expected to spray 12 structures per day. This is why we have the same number of spray teams for Bandiagara and Mopti for different numbers of target structures.

Spray teams consisted of five or six SOPs for one team leader. During the spray campaign, each operational site had a storekeeper, guards and washers. Spray operations began at 6 am, when the spray personnel met at their designated operational sites to put on PPE and pick up pumps and insecticide for the day. Once these were distributed, the supervisor met with the spray team leaders, shared the spray schedule for that day, and their route to reach each community.

Prior to the departure, the teams verified:

- State of vehicle
- Availability of phone numbers of all teams members (SOP, Team leader, Supervisor, Storekeeper and DTC…)
- State of road or river
- Departure time and Duration
- Assembly point in case of danger

The spray teams departed for the communities within one hour to carry out spraying, and they returned to the operational site around noon or 1 pm. At the soak pit, the SOPs lined up to do progressive rinsing of spray pumps and then they removed their coveralls and PPE for washing. They returned all insecticide bottles (both empty and unused bottles) to the site storekeeper. The storekeeper also counted/verified the number of empty bottles against the number of bottles reported having been used; the storekeeper then placed the empty bottles in their original boxes in the storeroom to await transport to a recycling facility after the IRS campaign. The unused bottles were returned to the

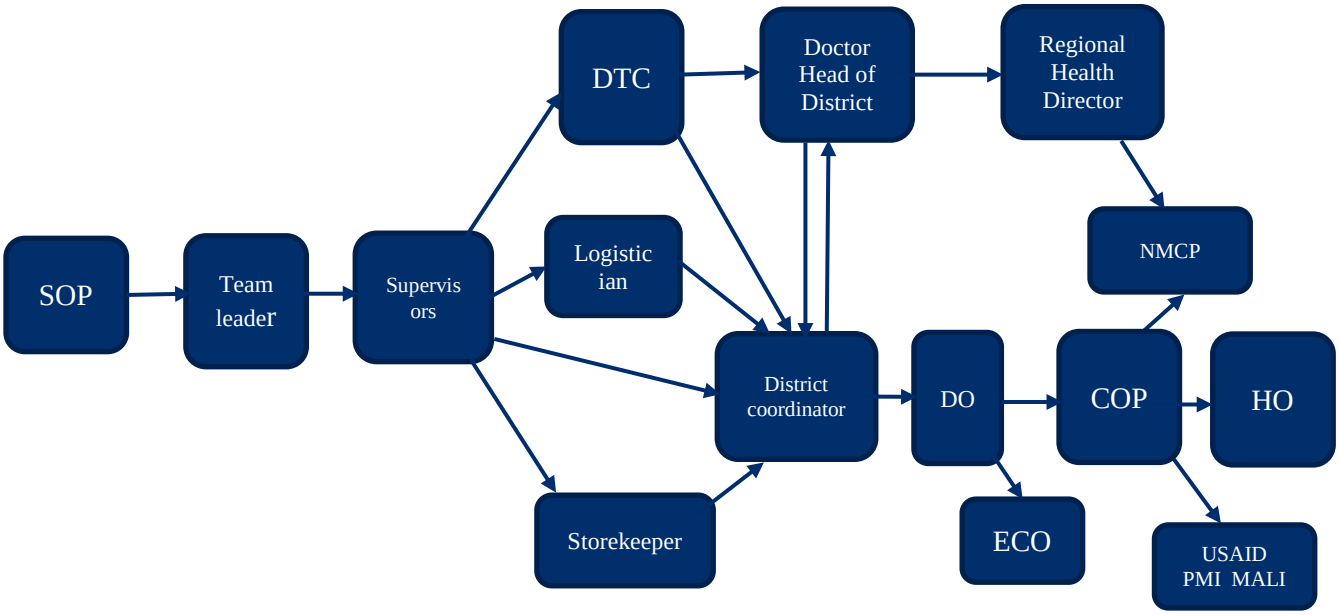
available stock-on-hand and were distributed the following day following the PMI policy of "first-expired first-out".

IRS district teams, consisting of a district coordinator, central warehouse manager, logistician, monitors and pump technicians, in close collaboration with the DTCs, provided oversight to achieve AIRS Mali's goal of providing day-to-day operational management and support for IRS implementation, including all aspects of monitoring and quality assurance for spray operations.

4.2 SECURITY ISSUES

As part of the project transfer to an insecure zone, Mopti, the Abt General Security Officer traveled to Bamako to train the AIRS Mali team on security protocols. The training took place on June 20th, 2017 in Bamako and covered preventative measures, communication plans, and situation management and response. The communication chain developed as a result of this training is depicted in Figure 5.

FIGURE 5: THE COMMUNICATION CHAIN



During the campaign, a number of security challenges were faced:

- Kontza Health Area, Mopti District:

  According to information given by the Kontza community Supervisor to the District Coordinator, armed men were on the Konna - Korientze road, and on the evening of 24 of July 2017, the AIRS

Mali spray team was visited by four of them (jihadists). The SOPs were asked about the project and the related activities.

Consequently, the Technical Director of the Health Center and the supervisor requested that the project vehicles no longer be sent to Kontza, Sendegue, Goulombo and Korientzé areas. In order to continue spraying, AIRS Mali replaced the vehicles with motorcycles. It must be known that supervision in that area had become practically impossible, which should be taken into consideration in future campaign planning.

- Korientzé Health Area, Mopti District:

  There were strong general security threats in the Korientzé health area, making the project and supervision teams unsafe on Konna - Korientzé roads. However, the spray campaign continued by the locally hired SOPs. The project team was strongly advised by the local authorities to reduce the supervision missions and to withdraw the vehicles from the project to continue the activities using less conspicuous methods of transportations such as motorbikes and public transportation.

- Sofara Health Area, Djenne District:

  Following spraying of Kounti Bambara and Kounti Marka villages in the Sofara health area on Wednesday, August 2nd, 2017, the health director of Mopti region called the AIRS Mali Chief of Party (COP) and asked him to stop with spray operations in all the villages located on the opposite side of the Niger River, based on instructions from the Mopti regional security officer – (government employee). Therefore, in agreement with the regional, district and local authorities the villages listed in Table 6 below were not visited due to security concerns.

TABLE 6 : VILLAGES NOT VISITED DUE TO SECURITY CONCERNS

Health District	Health Area	Village	# Structures not sprayed due to withdrawals
MOPTI	KOMOGUEL	N'Gomi	436
		Djibitaka	273
		Guembè	395
		Nantaka	229
		Kobaka	484
		Saré-Séni	1,261
		Toumoura	254
	KONNA	Diantakaye	595
		Yiméré	276
		Koubi	1,046
	KONTZA	Garangomé	114
	TONGORONGON	Poucthi	376
DJENNE	SOFARA	Kounti Bambara	14
		Kounti Marka	0
		Kounti Peulh	50
		Ndobougou	0

		Kombaka	660
TOTAL			**6,463**

Against strict instruction from the Chief of Part to not go to the opposite side of the Niger River, spray operators traveled to Kounti Peulh village in Sofara and were approached and encircled by 10 armed men, believed to be jihadists. The Spray team underwent body searches and the operators' bags were completely emptied, their phones were manipulated and they were asked a variety of questions regarding their work. The spray operators were ultimately released and were asked to not return to spray in that village in Sofara. A formal incident report was provided to the PMI AIRS team. Nobody was injured but the motorcycles sustained minor damage in the haste of leaving the area; the motorcycles were repaired by the project.

4.3 Architecture of Mopti and Djenne

The houses in certain neighborhoods of the towns of Mopti and Djenne are built in a unique style that leaves no space in the courtyard. The rooms inside are filled with goods that are difficult to remove, therefore it is complicated to ensure a good spraying of these houses, and this is a common reason for refusal.

Despite mobilization efforts prior to the campaign, spraying in these areas has been challenging due to limited space (both indoors and outdoors) for moving furniture and belongings away from surfaces.

4.4 Supervision of IRS

AIRS Mali deployed 53 field supervisors to monitor spray operations (one supervisor per site). In addition to monitoring the work of the spray teams, they managed the logistics of vehicles traveling to and from spray sites. They also observed spraying in randomly selected villages using phone-based inspection forms. The supervisors, in turn, were supervised by the DTC and the district coordinator. The DTC's role was to provide supervision to the campaign during morning mobilization and when the spray teams were doing cleanup at the end of each day. Information on the number of supervisory inspections is included in Annex D**.** The team observed that by 2017, AIRS Mali had developed too many supervisory tools. The increased burden on supervisors to complete and submit the high quantity of forms resulted in a lower number of inspections conducted. The quality of some inspections was also questionable as supervisors were selected on the basis of having credibility and familiarity in these challenging work environments, more so than their digital literacy, so the interface and some of the supervisory questions were not as intuitive as expected. The team will streamline the forms in future years and strengthen training to ensure that supervisors have an adequate and feasible amount of supervisory work to be done during IRS campaigns. The national, regional and district-level supervisions, however were carried out with satisfaction.

4.4.1 Using Motorbikes and Pinnaces

In addition to the usual logistics used, the project experimented with motorbikes and boats for accessing villages in the IRS target area.

The use of motorcycles was proposed during the geographical recognition by the community because of their knowledge of the area which may be inaccessible by other means. Availability was negotiated with local authorities and a contract was signed for 466 motorbikes.

Like the motorcycles, pinnaces were used to cross the river to spray certain villages. The pinnaces were hired on an as-needed basis.

4.4.2 Directly Observed Spraying

Similarly to 2016, the 2017 campaign enforced Directly Observed Spraying (DOS), in response to growing concerns about spray quality and the level of supervision by team leaders observed in some AIRS countries. Equipped with an 11-question checklist, each team leader had to observe each SOP of his/her team once a day every day and record the results on the spot. Monitors delivered these records to the data entry center every day for entering in a database. At the end of each week, the Database Manager produced the table of results and the Monitoring and Evaluation (M&E) manager produced a report that he shared with the operations manager, district coordinators, and the home office team for corrective feedback on the ground. For example:

- 32.4% of houses were incorrectly marked in Mopti during the first two weeks of the campaign; this rate was reduced to 10% in the third week as a result of DOS.
- 33.6% of Goizper pumps had leaks in Mopti during the first two weeks of the campaign; this rate was reduced to 10% in the third week as a result of DOS.

4.4.3 Challenges in Supervision

Because of the sensitive security situation and the fact that the AIRS Mali team relocated to a new region, recruitment of IRS Supervisors prioritized leadership skills and familiarity with the region. As a result, there were some challenges with the electronic supervisory forms in the first few weeks of the campaign. The ECO responded quickly by contacting supervisors to investigate any problematic red flags recorded and communicating false positives back to the home office. The ECO emphasized the importance of filling these forms out with care to ensure only true compliance issues were reported. Based on the feedback received this year, the AIRS team will work to streamline the supervisory responsibilities and strengthen training on the smartphones, including practical sessions with on-the-spot training.

4.5 Integration of Satellite Maps for Operational Planning and Implementation of IRS Activities

In 2017, AIRS Mali sprayed four new districts – Bandiagara, Bankass, Djénné, and Mopti – and thus agreed to incorporate high-resolution satellite imagery and remote enumeration of targeted spray areas in order to understand the total number of eligible structures and infrastructure in these areas. The AIRS Home Office, in collaboration with USAID GeoCenter, identified and selected the Humanitarian OpenStreetMap Team (HOT) as the technical partner to assist with these mapping activities. HOT provided enumeration estimates prior to the spray campaign but, due to an apparent miscommunication, these enumeration estimates were for entire districts whereas AIRS Mali only sprayed a selection of health catchment areas within each district, dictated primarily by security boundaries rather than administrative boundaries, as shown in Table 7. As a result, the enumeration estimates and maps were misaligned with the program targets.

TABLE 7. COMPARISON OF HOT ENUMERATION ESTIMATES TO AIRS TARGETS AND RESULTS.

Districts	HOT Enumeration Estimate	AIRS Target Structures	% of health catchment areas within district targeted by AIRS	Structures Found During 2017 IRS Campaign
Bandiagara	211,645	104,131	70%	95,604
Bankass	206,190	27,011	23%	26,998
Djénné	116,821	38,396	41%	36,109
Mopti	201,061	87,575	74%	80,639

Additionally, HOT did not provide the first version of the maps until August 10, 2017, which was the end of the third week of Mali's 5-week spray campaign (began on July 24, 2017). The first version of the maps also needed some revisions and additional reference information in order to be useful for the spray campaign and would have required significant training in order for the AIRS Mali staff to understand how to use them. After consulting with the AIRS Mali M&E Manager, the team realized that the time needed to revise and print the maps and train the staff would coincide with the end of the campaign so the maps were not used this year.

A screen shot of one of the guide pages is included in Annex D. The guide page shows individual "boxes" that refer to page numbers of individual map pages. For Mopti District alone, over 15 guide pages were included along with over 400 corresponding detailed map pages. Annex D also shows a screen shot of one individual map page in Mopti District. Due to its size, it is not feasible to attach the entire atlas provided by HOT to the End of Spray Report. This can be provided separately upon request.

4.6 Stock Management during the IRS Campaign

Good management of the PPE stock and especially the insecticide is a major priority during an IRS campaign. There must be a balance in the procurement, storage, and consumption of products, so nothing is out of stock.

4.6.1 Electronic Inventory Management

As it did in the preceding three years, in 2017 AIRS Mali used a program that allows it to do electronic management of PPE and insecticide stocks at the central (district) and secondary stores. The central warehouse managers in Sevare and Bankass used a Microsoft Access-based inventory database. At the end of each spray day, every site storekeeper sends a text message to the central warehouse managers, reporting bottles consumed and remaining full bottles. The district warehouse managers compiles this information into a database to produce a daily summary, which is used to predict site stock-outs and resupply the site before the stock-out occurs. In 2017, there were no stock-outs of PPE or insecticide.

4.6.2 Inventory Management at Operational Site Level

Each Actellic 300 CS bottle was tagged with an identification number with its district initials after the stock inventory was completed.

AIRS Mali recruited four district logisticians for the IRS campaign to serve as a link between the operational site storekeepers and the district warehouse managers. The logisticians worked to coordinate supply chains to move needed IRS materials to the appropriate operational site, and to ensure the correct use and accuracy of stock cards for inventory record-keeping. The district

logisticians regularly checked with storekeepers regarding their stock levels and, when needed, arranged for the transport of IRS commodities from the district warehouses to the operational sites.

Every morning during the spray campaign, the team leaders, with the storekeepers, would organize, distribute, and sign out all PPE to be used for the spray operations. The storekeepers also organized and distributed all PPE to the washers and other IRS staff as needed. At the end of each day, the PPE was turned over to the washers for cleaning. After the PPE was washed, the washers returned the PPE to the storekeepers and team leaders, who did another inventory count to ensure that all PPE had been returned.

At each operational site, storekeepers handed over to the team leaders the number of bottles of Actellic 300 CS that each SOP would use for spraying that day. The team leaders signed an insecticide tracking card to acknowledge receipt of the bottles. The cards also noted the codes of the bottles, for further tracking if needed. The team leader noted on a separate card the number of bottles provided to each SOP and the bottle codes.

At the end of each spray day, SOPs turned in their used and unused bottles to the team leader, who collated these and submitted them to the site storekeeper. The storekeeper recorded the returned full bottles on the stock card as a positive adjustment and updated the stock balance. The used bottles were registered on a daily utilization record form that helped AIRS Mali calculate trends in insecticide use.

Additionally, the storekeepers prepared a comprehensive weekly stock report and submitted it to the district logisticians and the AIRS Mali logistics coordinator, who then generated aggregated total stock balances for the IRS campaign and noted where PPE and insecticide needed to be sent from the district warehouses to prevent stock-outs.

Mid-way through the campaign, the district logisticians completed a physical inventory in each operational site in their districts and reconciled the physical counts with the warehouse inventories in each district. The AIRS Mali logistics coordinator reviewed these mid-campaign inventory balances and used them to send needed IRS commodities to each site during the second half of the campaign.

4.7 INCIDENTS DURING THE IRS CAMPAIGN

On August 3rd, 2017 a taxini (max capacity 6-persons) transporting spray operators to the field overturned injuring the driver and 2 operators. Injuries were not severe and operators returned to work. Pumps were carried on a separate bike not part of the accident.

On September 11th, during post-campaign environmental assessment activities, one AIRS staff and a government counterpart were involved in a vehicle accident. Both passengers and the driver were injured, two of them were hospitalized for 3 nights but have since fully recovered. This accident was reported from Perimpe village in Soufouroulaye health area, 6 km from the town of Mopti. The incident report was completed and sent by email within 24 hours.

5. MONITORING AND EVALUATION

All M&E activities and processes for the 2017 IRS campaign closely followed the processes outlined in the 2017 AIRS Mali Work Plan and the M&E Concept Paper developed by the AIRS core team. M&E activities, under the supervision of the COP, were led by the AIRS Mali M&E manager and the database manager. A previously used secure and reliable Microsoft Access database were updated by the database manager to reflect minor changes to the 2017 AIRS M&E system, and deployed to the data entry center in Mopti (Sevare). Twenty-four data entry clerks worked in the data center, which received data from Bandiagara, Bankass, Djenne, and Mopti districts. Two clerks were responsible for entering DOS data.

5.1 KEY OBJECTIVES

The key objectives of AIRS Mali M&E activities are:

- To emphasize accuracy of both the data collection and data entry processes through comprehensive training and supervision at all levels;
- To streamline and standardize data flow, minimize errors, and facilitate timely reporting;
- To ensure IRS data security and storage for future reference through the establishment and enforcement of proper protocols; and
- To document lessons learned and good practices observed in the implementation of the project activities and apply these to future project years.

5.2 DATA MANAGEMENT

The AIRS Mali team made revisions to the data collection process to reflect the updates to the AIRS M&E system for the 2017 spray campaigns, such as installing cleaner software on the computers of the data entry clerks, some of whom are pictured in Figure 6. As noted above, all updates were incorporated into the Access database to ensure accuracy and consistency of data entry and reporting.

FIGURE 6: DATA CLERKS IN SEVARE DATA CENTER

Data clerks entered spray data into the database to the data entry center in Mopti (Sevare) within 24 to 48 hours of spray for quality control purposes and the timely generation of weekly progress reports. It is important to mention the delivery of data collection forms from community-level entry center, especially four Health Areas behind Konna in the Mopti District and others Health Areas longest in Bandiagara, Bankass and Djenne District often took two to three days, not one day as planned. This was because the villages are difficult to access according to the state of the poor road conditions or reasons of insecurity and / or rain and monitors responsible for transporting data collection forms were not able to reach the health areas on time. We used a daily data tracking chart to alert district coordinators if the data was expected to arrive late. This method was extremely effective in reducing the delivery time of the forms. Once the data were entered, paper forms were filed and temporarily archived at the data center. Eventually, all the forms were transferred to the AIRS Mali office in Bamako for long-term storage. A

daily electronic back-up of the data was saved to the AIRS Mali server and to an external hard drive for data safety.

5.3 Data Quality Assurance and Quality Control

Data quality assurance was carried out daily during the IRS campaign by a variety of AIRS staff (SOPs, team leaders, district coordinators, M&E manager, database manager, etc.). Specific activities conducted to ensure data quality included:

Physical Data Verification:

- SOP level: Team leaders and the supervisors reviewed, arithmetically verified, and signed off on all Daily Spray Operator Forms.
- District level: District coordinators received the paper forms from the supervisors and checked the accuracy of the spray data with the Error Eliminator Form. This form allows one to check the quality of the data by comparing the online summation and the totals, the filling of the header. Afterward, the monitors delivered the Daily Spray Operator Forms to the data center each evening.
- Data entry level: Data clerks reviewed each form for typos and transcription errors and verified the arithmetic calculations on the Daily Spray Operator Forms were correct before entering them into the data into the database.

5.4 M&E Data Quality Assurance Tools and Results

AIRS Mali used three data quality assurance tools. These tools focus specifically on data quality assurance methods. After some initial struggles due to the conversion of the data collection verification form into an electronic version, the users learned how to navigate the form on a smart-phone. Tables 7 and 8 show the percentage of records verified by AIRS Mali in 2017 using each data quality assurance tool.

TABLE 8: TYPES OF M&E SUPERVISORY TOOLS USED AND DATA CHECK RESULTS

M&E Supervisory Tools	Structure Records Verified	Structure Records Corrected	Percent of Records Correct
Error Eliminator (Support 17 form)	15,617	2,186	86%
Data Collection Verification (Support 15 form)	5,625	731	87%
Data Entry Verification (Support 16 form)	2,411	311	85%

TABLE 9: DIRECTLY OBSERVED SPRAYING RESULTS

District	Total cases of supervision	SOP mix the insecticide to form a 7.5l solution? (NO)	Triple rinse of empty bottles (NO)	Full PPE on (NO)	Spray with valve (NO)	Removing food, and animals (NO)	Items inside Covered (NO)	Leaks from pump (YES)	Spray at 45 cm of wall (NO)	Maintain speed of spray (NO)	Respect for overlap band (NO)	House properly marked (NO)
Bandiagara	7,099	1	2	1	2	30	1	1291	26	8	2	484
Bankass	1,316	0	3	0	0	0	5	258	0	1	0	17
Djenne	2,724	0	0	0	18	0	3	441	1	0	0	344
Mopti	2,953	0	5	0	69	3	31	897	0	0	0	726
Total	**11,569**	**1**	**10**	**1**	**89**	**33**	**40**	**2,887**	**27**	**9**	**2**	**1,571**
% of tasks performed correctly		99.99	99.91	99.99	99.23	99.71	99.65	75.05	99.77	99.92	99.98	86.42

5.5 RESULTS

The complete list of all program indicators for the 2017 spray campaign is presented in the M&E Plan matrix in Annex F. The following sections provide summaries on the core PMI indicators and other spray indicators.

5.5.1 SPRAY COVERAGE

The 2017 AIRS Mali campaign sprayed 227,646 of the 239,350 structures found, for spray coverage of 95.11%. Despite considerable security challenges as well as logistical constraints (unique architecture, early rains leading to poor road conditions and refusal to remove belongings from structures), we were able to achieve a spray progress rate of 90.66% (227,646 sprayed out of 251,113 targeted). In total, 823,201 people were protected, including 23,496 pregnant women and 131,477 children under five, as seen in Table 9. Table 10 breaks down population protected by gender.

TABLE 10: SPRAY COVERAGE AND POPULATION PROTECTED

District	Eligible Structures Found	Structures Sprayed	Spray Coverage	Population Protected (Total)	Children <5 Protected	Pregnant Women Protected
Bandiagara	95,604	91,291	95.49%	302,671	50,584	6,850
Bankass	26,998	25,917	96.00%	84,929	15,093	1,696
Djenne	36,109	35,173	97.41%	138,447	21,891	3,558
Mopti	80,639	75,265	93.34%	297,154	43,909	11,392
Total	**239,350**	**227,646**	**95.11%**	**823,201**	**131,477**	**23,496**

TABLE 11: POPULATION PROTECTED, BY GENDER AND DISTRICT

	Total Population Protected		
District	Male	Female	Total
Bandiagara	150,616	152,055	302,671
Bankass	43,015	41,914	84,929
Djenne	71,817	66,630	138,447
Mopti	148,421	148,733	297,154
Total	**413,869**	**409,332**	**823,201**

5.5.2 INSECTICIDE USAGE

Table 11 shows insecticide availability and use in 2017. In total, 80,269 bottles of insecticides were used to spray 227,646 structures. On average, 2.8 structures were sprayed per bottle of insecticide, but a rate of 2.5 structures per bottle was used in the original quantification calculations. Due to this and the adjustment of the number of target structures, there are 42,412 bottles of Actellic 300 CS leftover from the 2017 campaign. These bottles do not expire until March 2019 and will be used during the 2018 spray campaign. The inventory will be securely stored in the two AIRS central warehouses in Mopti and Bankass.

If we had sprayed the original target of 306,673 structures at the same rate (2.8 structures/bottle) we would have used about 109,526 bottles and only 13,143 bottles would have remained.

TABLE 12: INSECTICIDE USAGE DURING THE 2017 IRS CAMPAIGN

Organophosphates	Balance
Actellic 300 CS balance before the spray campaign began	10,889
Actellic 300 CS procured for the 2017 campaign	111,792
Total number of insecticide bottles available for 2017 campaign	122,681
Actellic 300 CS bottles used during the 2017 IRS campaign	80,269
Balance after the completion of the campaign	42,412

6. ENVIRONMENTAL COMPLIANCE

6.1 ENVIRONMENTAL DOCUMENTATION

AIRS Mali operates under a Supplemental Environmental Assessment (SEA) that was written and approved in 2016. The SEA covers the use of all World Health Organization (WHO)-recommended insecticides for IRS, including pyrethroids, carbamates, organophosphates, and chlorfenapyr for the

period of 2016-2021. The SEA is valid for IRS activities in the four Districts of Bandiagara, Bankass, Djenne and Mopti.

The transfer of IRS activities to a new region, Mopti required an Environmental and Social Impact Assessment ESIA which was completed and approved in April 2017. The permit was obtained on June 29th 2017.

6.2 Mobile Soak Pit and Tyvek Suit Pilot

The 2017 campaign was the 3rd year of mobile soak pit (MSP) use in Mali. Previously the MSP had been used mainly in 7 health areas in Bandiagara sanitation district. Health areas in Bankass, Djenne and Mopti used a combination of fixed soak pits (FSP) and MSPs. The use of the MSPs helped AIRS Mali to continue improving its environmental and safety compliance, time management, cost efficiency, and SOP convenience during the campaign.

Based on the difficulty of installing FSPs in some health areas (due to hard and rocky soil), 96 actors used the MSP with Tyvek coveralls in 7 health areas: Mory, Ningari, Kamba, Djiguibombo, Ouo, Kori-Maounde and Bendiely.

The objectives of the Tyvek Suit Pilot were to demonstrate:

- Tyvek suits can be used in place of cloth overalls for IRS,
- Tyvek offers the same or better protection from insecticide contact on skin,
- Tyvek coveralls provide equal or greater comfort on hot days,
- Maintenance and end-of-day decontamination is easier and less resource-intensive, and
- The use of wet-wipes allows operators to clean their hands, sleeves, front upper body, and face shields in order to facilitate mid-day hydration.

Unfortunately, the wrong suits were procured and the intended suits were never tested. The new suits were tried but they were very heavy so SOPs were unable to continue using the Tyvek coveralls due to extreme discomfort, and the campaign continued using canvass coveralls.

6.3 Pre-Season Environmental Compliance Assessment

In accordance with the 2017 action plan, the site identification/Pre-Season Environmental Compliance Assessment (PSECA) took place from March 1st to 23rd, 2017 at 48 sites in the three districts of Mopti, Bandiagara, and Djenne. From May 30th May to June 3rd, 2017 in the Bankass district identifying 5 new storerooms and area soak pits. This identification and PSECA were carried out by an inspection team led by the AIRS Mali ECO and included representatives of the MOE's national, regional and local service. The objectives of this inspection were to:

- Review the location and physical condition of insecticide storerooms;
- Identify sites for fixed or mobile soak pits;
- Check the availability of sufficient quantities of PPE and hygiene items;
- Identify problems related to the storage of insecticides and equipment;
- Check the availability of pesticide-specific antidote at the district health center; and
- Write a report containing the recommendations and a plan to rectify any problems identified.

The ECO performed the initial and final PSECAs using a smartphone to assess the condition of all operational sites. Data collected from the smartphone was uploaded to the Abt Associates environmental compliance database and made available to the COP and Operations Manager.

During the PSECAs, AIRS Mali secured agreements within local communities to donate water for campaign activities. Unfortunately, several health areas failed or could no longer honor the water commitments secured prior to the campaign. To remedy the lack of water, AIRS Mali was able to successfully procure a reliable water supply without delay to campaign operations.

The initial PSECA provided a list of findings, including operational site-specific strengths and weaknesses. Responses to site-specific recommendations are listed in Annex E. AIRS Mali completed rehabilitation activities to resolve areas of improvement identified during the initial PSECAs. The finial PSECA, completed several days before the scheduled start of the campaign, verified the completion of all rehabilitation activities and the confirmed the readiness of each operational site.

Common strengths and areas that needed improvement are listed below:

Strengths

- Secondary stores were available in almost all health area.
- Storage site is located an adequate distance from sensitive receptor
- Danger signs were visible at the store level and washing areas fences.
- All soak pits and storage facilities were closed with heavy slabs.
- Stores were in good condition at almost all the sites visited.
- Atropine was available at district health centers.

Areas for Improvement

- Soak pit surrounding areas were covered with grasses/debris.
- Cracks were visible in the concrete of the washing areas.
- Need to build the fixed soak pit in all health areas except 7
- Padlocks needed to be replaced.
- Some windows did not have security bars or shutters
- Antidotes to pesticides were not available near health areas

All repairs including the soak pit installation were performed before the campaign start and all facilities were brought into compliance.

6.4 MEDICAL CLEARANCES

Before being contracted, IRS team members (SOPs, team leaders, supervisors, washers, and storekeepers) had to undergo a medical check; these were conducted in each operational site by the site's DTC. The purpose was to ensure the recruitment of medically suitable workers. In addition, pregnancy testing and counseling were provided for every woman who might have contact with pesticide. This is to avoid the recruitment of pregnant and lactating women for these positions.

6.5 MANAGEMENT OF INSECTICIDE ADVERSE EFFECTS

All spray team members (SOPs, team leaders, supervisors, washers, and storekeepers) were trained on the dangers of Actellic 300 CS, general safety, and other best-practice management of pesticides including the use of PPE during operations. They also received instruction on the use of spill kits and first aid kits.

Drivers hired to transport IRS commodities and spray teams received training on correct methods to secure and safely handle insecticides. Participants also learned how to manage an insecticide spill, and safely clean vehicles after each day of the IRS campaign.

The training session were organized in 24 training centers of the four districts by the health practitioners (DTCs), sanitation representatives and supervised by the coordinators. The training went over the correct protocol and methods to be followed to treat any potential poisoning case during the IRS campaign.

6.6 MID-SPRAY INSPECTION

To be more vigilant regarding safety and environmental compliance issues, two teams of seven inspectors (ECO, and six representatives from the MOE) performed inspections throughout the 2017 campaign. Representatives of environmental services at the national, regional and district levels were involved with the environmental inspections. The main practices the inspections sought to enforce were: no eating during IRS operations; keeping poultry and other livestock, children, and pets away during spraying; doing secure transport of operators and insecticides; triple rinsing, checking, and collecting empty insecticide bottles; having full first aid and spill management kits at stores; carrying out the washing process at the end of the day; keeping teams supplied with soap and water (for cleaning); and properly managing sweeping by homeowners after structures were sprayed.

The inspections identified the following areas for improvement:

- Pesticides were not mixed with the household resident present.
- Some households did not keep poultry away from the structure during spraying.
- The seven barrels were place outside of the wash area in some health areas
- Some storekeepers did not correctly fill out store cards
- In some health areas, the quantity of the remaining pesticide was significant.
- Some SOPs did not fill spray pumps using the contents of drums 1, 3, 5 and 7.
- SOPs in some sites failed to triple rinse empty bottles.

It is important to note that each inspection team had a smartphone for filling checklists and sending them to the server in Bethesda; the feedback from the server was sent to the COP, Operations Manager, M&E Manager and ECO for corrective measures to be taken.

All of these compliance issues were resolved in collaboration with the operations manager and the coordinators.

6.7 WASTE MANAGEMENT PLAN

At the end of campaign, all waste was collected and transported to both central warehouses at Mopti and Bankass. All empty Actellic 300 CS bottles will be rigorously washed with detergent and pierced at

the bottom before given to the partner, UMAPLAST. From the warehouse, bottles and others plastic waste will be transported to the UMAPLAST site in Bamako. At the time this report was written, the empty bottles have been transported to the central warehouses in Mopti and Bankass, and incineration is scheduled to start around the 20th of October 2017.

Other wastes such as contaminated masks and cardboard will be incinerated by trained operators at the AIRS Mali incinerator at Noumoubougou landfill.

6.8 COMMUNICATION

As in past years, the focus has been on communication between the team leaders and SOPs. Each SOP has to spray a certain number of structures per day, according to the locality. Prior to mixing a bottle of pesticide toward the end of the day, they communicate with the team leader, who checks with other team members if any SOPs have finished spraying and has pesticide remaining in their pump. The SOPs in need of additional chemical take the remaining quantity from their colleagues' pumps to finish spraying. This helped us to limit the production wastewater and to avoid the waste of insecticide.

7. ENTOMOLOGY

7.1 INTRODUCTION

The July 2017 IRS campaign was the first round of spraying with pirimiphos-methyl (Actellic 300 CS) in Mopti Region. Prior to spraying, widespread pyrethroid resistance was reported in malaria vectors but there was full susceptibility to pirimiphos-methyl. To determine the quality of spraying on walls, bioassays were conducted one to two days after IRS, using a laboratory-reared, susceptible colony of *An. gambiae s.s.* Kisumu strain. Cone bioassay was conducted in four districts of Mopti, Bandiagara, Bankass and Djenne according to WHO protocols.

In total, cone bioassays were conducted in 20 structures, with tests conducted in 5 houses per district (Table 12). In each sprayed house, laboratory susceptible *Anopheles* mosquitoes were exposed on a wall at varying heights 0.5 m, 1.0 m, 1.5 m and 2.0m from the floor. A control cone was set on a plywood board outside of each sprayed house in a shaded area close to the house. Fumigant bioassays were also carried out in each tested house to determine the contribution of airborne effects to overall mortality in cone bioassays. A small wire cage measuring 15cm by 10cm covered with untreated polyester netting material was placed approximately 10cm from a sprayed wall & about 1m above the floor. Exposure time was 30 mins, with mortality subsequently recorded 24h later.

TABLE 13: IRS CONE BIOASSAY SURVEILLANCE SITES FOR 2017

Region	District	Health Area	Site (village)	Spray Status	Geographic Zone	IRS History
Mopti	Mopti	Tongorongo	Tongorongo	Sprayed	Sahelian	2017 first year of OP IRS
	Badiangara	Badiangara central	Dandoly	Sprayed		2017 first year of OP IRS
	Bankass	Bankass central	Bankass	Sprayed		2017 first year of OP IRS
	Djenné	Madiama	Madiama	Sprayed	Sahelian Flooded	2017 first year of OP IRS

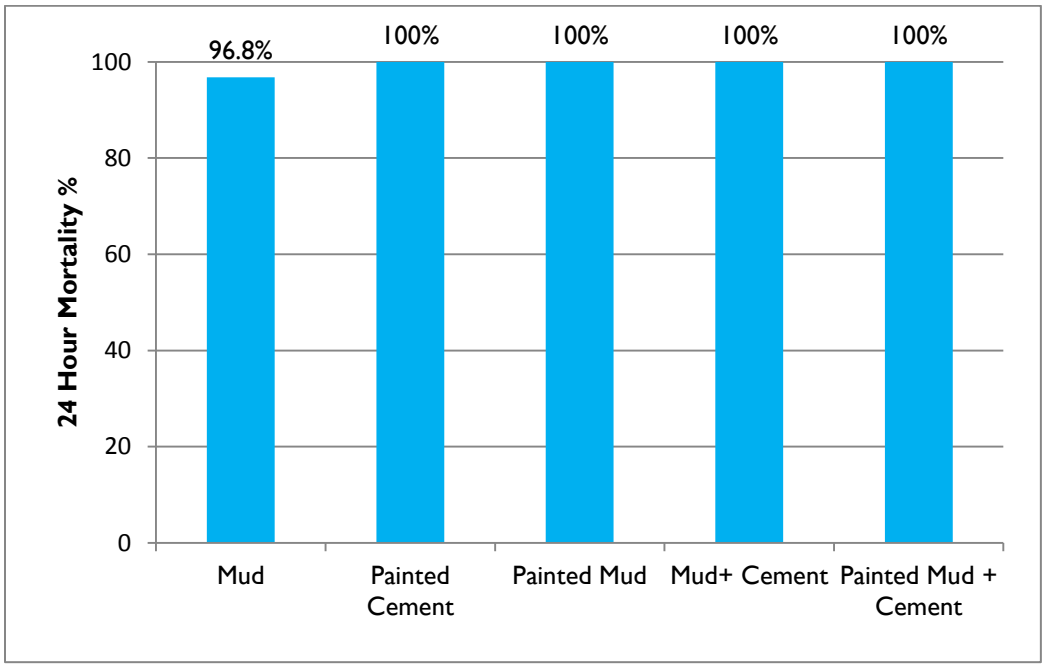
7.2 RESULTS

The results of WHO cone bioassays performed 1-2 days after the spraying showed mean mortality rates of 100% at the four different heights (Table 13). The fumigant air-borne effect of Actellic 300 CS ranged from 96.8% to 100% according to the different type of wall encountered (Figure 7). This effect will be followed until mortality due to airborne effect drops to less than 20%. These results indicate that IRS was conducted satisfactorily in the houses tested.

TABLE 14: RESULTS OF QUALITY ASSURANCE CONE BIOASSAY TESTING FOLLOWING IRS (AUGUST 2017)

Cone Position	No. Structures	No. Mosquitoes	No. Mosquitoes Knocked Down 30 Min	% Knock Down 30 Min	No. Mosquitoes Knocked Down 60 Min	% Knock Down 60 Min	No. Mosquitoes Dead after 24 Hrs.	% Observed Mortality
0.5 m	20	236	82	34.7%	194	82.2%	236	100%
1 m	20	236	53	22.5%	171	72.5%	236	100%
1.5 m	20	237	60	25.3%	173	73.0%	237	100%
2 m	20	232	52	22.4%	168	72.4%	232	100%
Total test	80	941	247	26.2%	706	75.0%	941	100%

FIGURE 7: AIRBORNE EFFECT (% MORTALITY OF KISUMU STRAIN *AN. GAMBIAE*) OF ACTELLIC 300 CS, AUGUST 2017



8. POST-SPRAY ACTIVITIES

The 2017 IRS campaign was completed on August 27, 2017. This chapter discusses activities implemented after the campaign was completed.

8.1 POST-SPRAY MEETINGS

In September, AIRS Mali staff held a review meeting in each of the four spray districts. DTC, ASACO leaders, village chiefs, and representatives from community women's and youth associations, local NGOs, and mayors and prefects attended the meetings. Where possible, seasonal IRS campaign staff including SOPs, team leaders, district coordinators, and storekeepers also attended the meetings. The meetings provided an opportunity for community members to jointly assess the 2017 spray campaign and provide recommendations for improving IRS programming in 2018.

During these meetings, some participants (DTCs and ASACO Presidents) announced a perceived decrease in the number of patients in health centers compared to last year.

Administrative authorities, politicians, technical services and community leaders recommended extending IRS to other health areas in the IRS districts.

A regional level review meeting was held in Mopti subsequently. Some of the recommendations made are the following:

- Increase number of women in spraying teams
- Extending IRS to other health areas in the IRS districts
- Ensure water supply to wash areas

8.2 POST-SPRAY INVENTORY

Starting in September, the project team returned all PPE and insecticide and other consumables left over from the 2017 IRS campaign to the district warehouses, where the AIRS Mali logistics coordinator and district warehouse managers inventoried them. The results of the inventory are included in Annex A. Notable points regarding the current inventory follow:

- In 2017, AIRS Mali procured new coveralls, face shields, and brackets for face shields.
- Any obsolete items were replaced with a new supply if necessary prior to the spray campaign.
- The increased procurement quantities was due to the fact the number of structures enumerated was expected to increase in Mopti (4 new districts) as compared to the districts Koulikoro, Fana, and Baraoueli previously sprayed. Ultimately the number of structures sprayed was approximately the same, and therefore the leftover inventory is greater than planned.
- The Goizper pumps from previous years were in use again during the 2017 year spray campaign.
- During the geographical reconnaissance two warehouses have been identified, one in Sevare town and a second in Bankass town. Commodities will be stored there until next year and will be dispatched again to secondary stores at the beginning of the 2018 spray campaign. These warehouses are the same that were used during the campaign.

8.3 POST-SPRAY CAMPAIGN RADIO PROGRAMS

Two weeks after the end of the IRS campaign, 12 radio broadcasts in Bandiagara, Bankass, Djenne and Mopti districts offered short messages and programs that reinforced information on the following topics:

- The advantages and importance of sleeping in sprayed structures, to prevent malaria transmission;
- The importance of continuing to use insecticide-treated bed nets even after the spraying;
- Sprayed walls should not be painted or plastered until February, to allow the insecticide to remain effective against mosquitoes; and
- General information on malaria transmission, prevention, and treatment.

9. CAPACITY BUILDING ACTIVITIES

In 2017, the supervisory forms updated in 2016 were managed by district coordinators, district malaria focal points, and supervisors who played a more active role in ensuring the forms were filled out and used for decision making throughout the campaign. Therefore, these staff were engaged in the management and implementation of the supervisory tools. They reviewed the forms on a daily/weekly basis to monitor their use and troubleshoot any issues.

The supervisors from national, regional, and district levels were oriented to the use of smartphones prior to conducting the supervision of IRS campaign. Technical partners were involved at all stages of the planning of IRS activities, including:

- Geographical recognition;
- Quantification;
- Enumeration;
- Mobilization;
- Pre-Campaign Environmental Compliance Inspection (identification of sites and the negotiation of secondary Stores);
- Micro-planning;
- Selection of actors and
-
- Training of actors.

10. GENDER

The project intensified the recruitment of women to serve as seasonal staff during the 2017 campaign. As mentioned earlier in the report, AIRS Mali organized orientation meetings to introduce IRS at all levels (Region, Health District, Health Area and Villages). As part of these meetings, AIRS Mali highlighted the importance of engaging more women in IRS implementation. The project team clarified what measures it takes to make sure the workspace for female staff was comfortable and requested support of the leaders in involving more females in the spray campaign, including the separation of wash facilities and lower privacy doors in the women's facilities. The leaders agreed, and kept their promises.

The project worked with the Coordination of the Women's Associations and NGOs (CAFO) of all districts for awareness during the IRS campaign.

During the 2017 spray campaign in Mopti, 15.9% of people trained were female, the breakdown is shown in Table 14. In the former zones during the first year of awareness raising for the involvement of women (2015), the project reached 16.5%. But we cannot compare these figures because the realities of the new intervention area and the duration of the project are different.

TABLE 15: STAFF TRAINED, BY GENDER, 2017

Categories of Persons Trained	2017			
	Male	Female	Total	Percent Female
DTC	45	8	53	15%
District coordinators	4	0	4	0%
Spray operators	659	101	760	13%
Data clerks	5	19	24	79%
Community supervisors	47	6	53	11%
Team leaders	150	22	172	13%
Washers	0	113	113	100%
Logisticians	4	0	4	0%
Secondary warehouse keepers	39	14	53	26%
Central warehouse keepers	2	0	2	0%
Doctors involved in treating cases of poisoning	45	8	53	15%
Mobilizers	1,265	189	1,454	13%
Entomology technicians	13	2	15	13%
Security guards	102	2	104	2%
Drivers (moto, minibus, pick-up)	167	0	167	0%
Radio hosts	12	0	12	0%
TOTAL	**2559**	**484**	**3043**	**15.9%**

Two female SOPs experienced some challenges with the standard PPE because their spray areas are quite conservative. These women were innovative and tied a traditional cloth skirts around their

protective clothing. To mitigate the risk of contamination, the traditional cloth skirts were cleaned in the same manner as the coveralls. This guidance will be offered to SOPs in future campaigns to mitigate any concerns about women's dress.

The project team attaches great importance to the increase in the number of women in the implementation of the project. For example, when setting up stakeholder selection committees. We strongly emphasized the strong involvement of women and hiring two women in security guard roles. Hiring women in roles that are traditionally held by men (such as drivers or security guards) is a challenge in Mali but the project takes great pride in providing women with a supportive environment to explore such opportunities.

During the trainings of the actors, emphasis was placed on the dangers of insecticide exposure for everyone, but especially for pregnant or nursing women. Pregnancy testing and counseling were provided for every woman who might have contact with pesticide. No women were found to be pregnant during the spray campaign but the AIRS Mali team adheres to PMI policy of reassigning women to roles that do not involve exposure to insecticide if pregnant.

Due to the relocation of IRS activities to the Mopti region, logistics and security were heavily prioritized in this year's training. In subsequent years, we plan to increase awareness to increase the number of women on spray teams, with more robust gender-sensitive policies (such as provision of sanitary napkins), and re-introduce gender-sensitive modules to the Training of Trainers. This was one of the important recommendations during the post-spray review workshops.

11. Lessons Learned and Recommendations

- The increase in the number of pump technicians in the districts of Mopti and Bandiagara has greatly reduced the problems associated with pumps.
- The use of community radio is an effective way to fight against the bad rumors and complements the community mobilization efforts.
- Mobile payment of seasonal employees should be continued in 2018 but AIRS Mali staff must first be sure to collect correct phone numbers for all employees who will be paid in this way.
- Administrative authorities, politicians, technical services and community leaders recommended extending IRS to other health areas in the IRS districts.
-
- The need for better communication with the districts from which IRS was withdrawn to ensure a common understanding of why they were not receiving IRS and what other malaria control interventions were available to them.
- The communication chain must be very clear and known to all during the IRS campaign and especially in a context of insecurity (Figure 5).
- The use of the WhatsApp Group has made it possible to inform several people at different levels of the urgent security situations.
- Scrupulously respect the recommendations made by the local authorities regarding safety.
- Recruit temporarily a person in charge of the security aspects.
- Consider the structures in concessions where there is no space in the yard to be ineligible as well as large apartment complexes in the urban centers of Mopti and Djenne. .
- Organize a workshop to reflect on the frequency of use of supervisory forms and consider reducing the supervisory burden to prioritize supervisory quality over quantity.

ANNEX A: 2017 POST-IRS INVENTORY

TABLE A-1: SEVARE WAREHOUSE INVENTORY

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
International Procurement					
Insecticide, Actellic 300CS / Exp Mrch 19	6506	54540	61046	35738	25308
Spray Pump Goizper	384	75	459	5	454
Helmet	593	64	657	10	647
Red Bright Vest	39	0	39	1	38
Green Bright Vest	144	0	144	3	141
Gumboots	630	160	790	11	779
Coverall	1256	120	1376	0	1376
Tyvek Coverall /Mobile Soak pit Teams	10	0	10	0	10
Wipes /"lingette"	0	0	0	0	0
Thermometer, Simple /or Electronic	33	0	33	0	33
Gloves	622	792	1414	167	1247
Gloves for Incineration	0	0	0	0	0
Respirator Mask	12540	10200	22740	19350	3390
Face Shield	360	560	920	250	670
Support Face Shield	966	560	1526	0	1526
Complete Handle /Goizper	30	0	30	19	11
Hose /Goizper	9	153	162	17	145
Team leader survey kit 7.5 /Goizper	50	595	645	115	530
Pressure regulator /Goizper	6	601	607	227	380
Fan even nozzle /Goizper	250	151	401	80	321
Filter simple /Goizper	250	150	400	48	352
Safety valve 2.5 bar /Goizper	93	300	393	89	304
Assembly (583,1175,19) /Goizper	141	0	141	78	63
Filter with gaskets /Goizper	94	0	94	8	86
Lance tube /Goizper	73	121	194	74	120
DISC HC 80 0.2 /3/Goizper	273	0	273	0	273
Valve /Goizper	82	300	382	78	304
Collar seal /Goizper	9	498	507	208	299
Nozzle (plastic) 8002E (yellow	0	0	0	0	0

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
color)/Goizper					
Spares Kit Hudson	0	0	0	0	0
Nozzle Tip Hardened Stainless Steel (65) 8002E Catalog /Hudson	20	0	20	0	20
Nozzle Tip Hardened Stainless Steel (65) 8001E Catalog/ Hudson	138	0	138	0	138
Nozzle flow reg Assembly (61) Catalog/153-400E / Hudson	9	0	9	0	9
Pump Filter Strainer (45)/Hudson	207	0	207	0	207
Extension tube assembly only (54)/ Hudson	0	0	0	0	0
Nozzle flow regulator (64)/Hudson	17	0	17	6	11
Cup leather only / Hudson	350	0	350	20	330
Cup retainer (20D) (White)	0	0	0	0	0
Plunger Adaptor (20C) (Black)/ Hudson	247	0	247	247	0
Pump Cylinder Assembly Completed for 3 & 4 Gallon (3 &4 Gallon unit) Catalog (21) / Hudson	57	0	57	57	0
Supply tube only Catalog (14) “resort de régulation”/Hudson	28	0	28	28	0
Pressure Gauge with filter assembled (A)/ Hudson	12	0	12	1	11
Male fitting for strainer housing (43) Catalog	127	0	127	0	127
Valve /spray pump (red color)/ Hudson	32	0	32	22	10
Ring for valve/ Hudson	0	0	0	0	0
Kit (spare part Hudson) small size	15	0	15	6	9
Local Procurement					
Steel Container /for Waste					
Motorbike /YBR125	7	0	7	0	7
Solar Panel	0	12	12	4	8
Solar Mobile Lamp	52	10	62	17	45
Mobile Soak Pit	0	0	0	0	0
Spatula for Coal Load	14	0	14	0	14
Heavy Battery for Solar Panel	16	0	16	0	16
Electric Inverter	3	0	3	0	3
Ventilator /Wall	4	9	13	0	13
Bucket Plastic 60/ 40/30 Liters	7	0	7	0	7

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
Bucket Metal 10/15 liters	125	0	125	11	114
Bucket Plastic /15-10-20 Liters	30	0	30	10	20
Waste Bin Hard plastic	36	0	36	14	22
Cup /metal /plastic 1 Liter	57	50	107	33	74
Calibration Cup	139	362	501	34	467
Wood Seat	30	0	30	3	27
Scoreboard	31	0	31	11	20
Shovel with Short Handle	77	50	127	0	127
Fire Extinguisher	39	0	39	0	39
Operator Bag	147	409	556	28	528
Monitor Bag	5	11	16	7	9
Tent for Mobile Sites	44	7	51	12	39
Life Jacket	7	0	7	0	07
Tarpaulin Simple	36	119	155	22	133
Tarpaulin for Mobile Soak Pit Floor	0	0	0	0	0
Raincoat	60	726	786	87	699
Head Lamp	359	324	683	34	649
Lamp Guard	40	60	100	32	68
Whistle for Guard	30	24	54	15	39
Water Filter	211	50	261	11	250
Plastic Drum/160/200 Liters	261	0	261	166	95
Bar Angle	3	2962	2965	2621	344
Fence	16	160	176	85	91
Metal String 1mm /Roll	2	159	161	157	4
Metal String 2.5mm/Roll	0	53	53	53	0
Pincer	2	0	2	0	2
Adjustable Wrench	4	0	4	2	2
Screw Driver	3	0	3	1	2
Binate/"daba"	22	0	22	1	21
Knife "couteau"	13	0	13	0	13
Tape 10m	6	0	6	0	6
Chair /Wood /indus-	0	0	0	0	0
Desk/Wood /indus-	0	0	0	0	0
Matt/Straw/Plastic	71	0	71	18	53
Flipchart	0	0	0	0	0
Empty Barrel/Metal 200 Liters.	4	0	4	0	4
Plastic Drum /20L	78	10	88	44	44
Metal Digger /"bramine"	4	0	4	0	4

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
Mobile Phone / Smarthhone With M&E	29	0	29	0	29
Basic Phone /With M&E	120	0	120	2	118
Plastic Operator	336	560	896	199	697
Waste Plastic Bag	390	600	990	600	390
Plastic Roll	0	0	0	0	0
Light Engine 1.20m source Generator	0	10	10	0	10
Ampoule 1.20m source generator	0	10	10	0	10
Light Engine 0.60m source generator	0	0	0	0	0
Ampoule 0.60m source generator	0	0	0	0	0
Ampoule oval source solar panel	2	0	2	0	2
Towel	28	933	961	16	945
Teflon	12	0	12	5	7
Sweeper Traditional	0	5	5	0	5
Sweeper Industrial	78	75	153	09	144
Stapler	32	0	32	6	26
Envelope A4	225	100	325	84	241
Glue Stick	24	0	24	0	24
Chrono Hard Folder	26	0	26	0	26
Paper Folder	200	1000	1200	860	340
Filing box	0	0	0	0	0
Cover Cartoon	486	0	486	0	486
Flashdrive	3	0	3	3	0
Ruler 1m	0	0	0	0	0
Ruler 30 Cm	23	0	23	13	10
Paper Punch	1	0	1	1	0
Pin Box of 45 Pins	65	0	65	65	0
Staples box “Agraphes”	40	0	40	17	23
Calculator	64	30	94	0	94
Copybook	0	10	10	3	7
Bloc Notes	0	0	0	0	0
Book Register	7	32	39	32	7
Paper Ream A4	38	20	58	48	10
Sticker for Notes/ pack of 100 Sheet	0	0	0	0	0
Permanent Marker	1130	3650	4780	1964	2816
Pen Blue	150	750	900	719	181
Pen Red	0	0	0	0	0
Plastic Folder with Cover	127	505	632	457	175

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
Fluid Corrector	0	0	0	0	0
Tape Transparent GF	23	45	68	39	29
Tape / Paper	14	22	36	33	3
Activated Carbon /Kg	20	0	20	0	20
Pregnancy Test /Exp 08-2018	0	336	336	205	131
First Aid Kit	137	39	176	59	117
Soap Piece	1344	7344	8688	5042	3646
Soap Powder/Sachet	3600	47700	51300	25500	25800
Bleach/"Javel" 1L	132	324	456	168	288
Battery /R20	0	350	350	350	0
Battery AAA	406	5538	5944	4444	1500
Battery AA	810	35	845	185	660
Lubricant Box "graisse"1Kg	2	0	2	0	2
Distilled Water 1L	0	0	0	0	0
Glue Liquid Box 1Kg	2	0	2	0	2
Oil Motorbike/ quartz 5000 Total /Liter	5	50	55	40	15
Mixing Oil Motorbike 15W40 Shell/liter	40	40	80	20	60
Pump Maintenance Oil	59	0	59	30	29
Motorbike Helmet	5	0	5	5	0
Vilebrequin and Rod Assembly /YB100	4	0	4	0	4
Tyre Motorbike Front /YB100	4	0	4	0	4
Tyre Motorbike Back /YB100	0	0	0	0	0
Tube Motorbike /YB100	0	0	0	0	0
Tube Motorbike /YB125	5	15	20	4	16
Wheel /YB100	1	0	1	0	1
"Segment" YB100	4	0	4	0	4
"Disque" YB125	0	0	0	0	0
Odometer /YB100	0	0	0	0	0
Direction Light Single /YB100	4	0	4	0	4
Kit Motorbike "(Chain, petit pion, Grand Pion)"/YB100	0	10	10	2	8
Spare Trailer for Motorbike (roulement) / YB100	2	0	2	0	2
Motorbike Piston / YB100	1	0	1	0	1
Boogie /YB100	5	0	5	0	5
Boogie YB125	0	15	15	5	10

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
T-shirts	0	1339	1339	1339	0
Hat	0	1340	1340	1340	0
IRS Card	9150	104048	113198	98998	14200
IRS Leaflet	2284	98134	100418	25904	74514
Banderole sensitization/ Operator GF	1	0	1	0	1
Metal sign "not allowed drink eat smoke"	37	59	96	9	87
Metal danger sign "Skull"	33	92	125	27	98
Sticker "not allowed drink eat smoke"	54	187	241	228	13
Danger Sticker "Skull"	94	190	284	269	15
Procedures for Insecticide Transportation	0	132	132	16	116
Procedures for Insecticide Storage	42	132	174	98	76
Booklet on Structure Definition	292	515	807	489	318

TABLE A-2: BANKASS WAREHOUSE INVENTORY

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
International Procurement					
Insecticide, Actellic 300CS / Exp Mrch 19	4383	57252	61635	44531	17104
Spray Pump Goizper	417	00	417	00	417
Helmet	559	96	655	51	604
Red Bright Vest	82	00	82	00	82
Green Bright Vest	155	00	155	00	155
Gumboots	739	00	739	00	739
Coverall	1084	120	1204	00	1204
Tyvek Coverall /Mobile Soak pit Teams	127	1650	1777	220	1557
Wipes /"lingette"	63	12288	12351	10796	1555
Thermometer, Simple /or Electronic	49	00	49	06	43
Gloves	1077	864	1961	777	1184
Gloves for Incineration	0	0	0	0	0
Respirator Mask	9840	10680	20520	17400	3120
Face Shield	665	550	1215	1040	175
Support Face Shield	1138	550	1688	201	1487
Complete Handle /Goizper	44	00	44	29	15
Hose /Goizper	28	00	28	00	28
Team leader survey kit 7.5 /Goizper	60	00	60	60	00
Pressure regulator /Goizper	31	00	31	00	31
Fan even nozzle /Goizper	100	00	100	00	100
Filter simple /Goizper	550	00	550	470	20
Safety valve 2.5 bar /Goizper	203	00	203	00	203
Assembly (583,1175,19) /Goizper	160	00	160	64	96
Filter with gaskets /Goizper	200	00	200	200	00
Lance tube /Goizper	149	00	149	18	131
DISC HC 80 0.2 /3/Goizper	86	00	86	86	00
Valve /Goizper	203	00	203	00	203
Collar seal /Goizper	201	00	201	98	103
Nozzle (plastic) 8002E (yellow color)/Goizper	590	00	590	424	166
Local Procurement					
Steel Container /for Waste	02	0	02	0	02
Motorbike /YBR125	10	00	10	Sevare wshe02	08
Solar Mobile Lamp	92	0	97	04	93

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
Mobile Soak Pit	01	34	35	00	35
Spatula for Coal Load	0	0	0	0	0
Ventilator /Wall	08	00	08	00	08
Bucket Plastic 60/ 40/30 Liters	213	00	213	09	204
Bucket Metal 10/15 liters	173	00	173	3	170
Bucket Plastic /15-10-20 Liters	24	00	24	01	23
Waste Bin Hard plastic	77	00	77	05	72
Cup /metal /plastic 1 Liter	692	60	752	13	739
Calibration Cup	359	50	409	103	306
Wood Seat	80	00	80	7	73
Scoreboard	24	00	24	03	21
Shovel with Short Handle	145	60	205	00	205
Fire Extinguisher	60	00	60	00	45
Operator Bag	340	483	823	362	461
Monitor Bag	7	13	20	04	16
Tent for Mobile Sites	71	08	79	3	76
Life Jacket	08	00	08	00	08
Tarpaulin Simple	76	10	86	19	67
Tarpaulin for Mobile Soak Pit Floor	70	08	78	08	70
Raincoat	584	40	624	182	442
Head Lamp	604	300	904	69	835
Lamp Guard	53	70	123	19	104
Whistle for Guard	48	30	78	08	70
Water Filter	293	50	343	00	343
Plastic Drum/160/200 Liters	467	00	467	40	427
Bar Angle	09	113	122	00	122
Fence	28	00	28	15	13
Metal String 1mm /Roll	42	00	42	07	35
Metal String 2.5mm/Roll	0	0	0	0	0
Pincer	4	00	04	03	01
Adjustable Wrench	03	00	03	00	03
Screw Driver	15	04	19	02	17
Binate/"daba"	32	00	32	00	32
Knife "couteau"	0	0	0	0	0
Tape 10m	26	00	26	Bdgara03	23
Chair /Wood /indus-	03	04	07	01	06
Desk/Wood /indus-	00	01	01	00	01

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
Matt/Straw/Plastic	45	00	45	12	33
Flipchart	03	00	03	00	03
Empty Barrel/Metal 200 Liters.	13	00	13	Bdgara04	09
Plastic Drum /20L	116	10	126	15/HealthC76	35
Metal Digger /"bramine"	21	00	21	Coord Bdgara03	21
Mobile Phone / Smarthhone With M&E	24	0	24	1	23
Basic Phone /With M&E	105	0	105	03	102
Plastic Operator	772	87	859	183	676
Waste Plastic Bag	167	600	767	270	497
Plastic Roll	0	0	0	0	0
Light Engine 1.20m source Generator	02	00	02	00	02
Ampoule 1.20m source generator	0	0	0	0	0
Light Engine 0.60m source generator	06	00	06	00	06
Ampoule 0.60m source generator	08	00	08	03	05
Ampoule oval source solar panel	09	00	09	00	09
Towel	32	1039	1071	615	456
Teflon	35	00	35	01	34
Sweeper Traditional	13	05	18	05	13
Sweeper Industrial	174	50	224	16	208
Stapler	50	00	50	00	50
Envelope A4	75	100	175	75	100
Glue Stick	57	00	57	08	49
Chrono Hard Folder	57	00	57	04	53
Paper Folder	00	4750	4750	1150	3600
Filing box	272	00	272	118	154
Cover Cartoon	00	40	40	40	00
Flashdrive	05	00	05	00	05
Ruler 1m	07	00	07	00	07
Ruler 30 Cm	59	00	59	04	55
Paper Punch	02	00	02	00	02
Pin Box of 45 Pins	110	00	110	30	80
Staples box "Agraphes"	149	00	149	131	18
Calculator	112	35	147	08	139
Bloc Notes	77	00	77	41	36
Book Register	00	40	40	40	00
Paper Ream A4	05	20	25	01	24
Sticker for Notes/ pack of 100 Sheet	15	00	15	01	14

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
Permanent Marker	390	3640	4030	2160	1870
Pen Blue	38	750	788	788	00
Pen Red	181	00	181	00	181
Plastic Folder with Cover	44	505	549	529	20
Fluid Corrector	00	00	00	00	00
Tape Transparent GF	46	45	91	25	66
Activated Carbon /Kg	20	00	20	00	20
Pregnancy Test /Exp 08-2018	72	145	217	164	53
First Aid Kit	141	51	192	133	59
Soap Piece	240	7192	7392	6624	768
Soap Powder/Sachet	1500	56400	57900	26100	31800
Bleach/"Javel" 1L	12	300	312	198	114
Battery /R20	28	240	268	140	120
Battery AAA	660	4251	4911	3395	916
Battery AA	12	35	47	12	35
Lubricant Box "graisse"1Kg	0	0	0	0	0
Distilled Water 1L	26	00	26	00	26
Glue Liquid Box 1Kg	03	02	05	00	05
Oil Motorbike/ quartz 5000 Total /Liter	20	40	60	42	18
Mixing Oil Motorbike 15W40 Shell/liter	80	40	120	2o	100
Pump Maintenance Oil	0	0	0	0	0
Motorbike Helmet	08	00	08	02	06
Vilebrequin and Rod Assembly /YB100	07	00	07	00	07
Tyre Motorbike Front /YB100	04	00	04	00	04
Tyre Motorbike Back /YB100	05	00	05	00	05
Tube Motorbike /YB100	0	0	0	0	0
Tube Motorbike /YB125	0	0	0	0	0
Wheel /YB100	0	0	0	0	0
"Segment" YB100	04	00	04	00	04
"Disque" YB125	02	00	02	00	02
Odometer /YB100	01	00	01	00	01
Direction Light Single /YB100	02	00	02	00	02
Kit Motorbike "(Chain, petit pion, Grand Pion)"/YB100	00	10	10	09	01
Spare Trailer for Motorbike (roulement) / YB100	0	0	0	0	0

Item Description	Balance after 2016 IRS Campaign	Number of Items Procured in 2017	Stock Before 2017 IRS Campaign	Consumed/ Unusable Stock after 2017 IRS Campaign	Usable Stock Remaining for 2018
Motorbike Piston / YB100	0	0	0	0	0
Boogie /YB100	0	0	0	0	0
Boogie YB125	12	15	27	13	14
T-shirts	00	1340	1340	1340	00
Hat	00	1340	1340	1340	00
IRS Card	48500	110952	159452	136242	23210
IRS Leaflet	22000	84866	120134	81247	38887
Metal sign "not allowed drink eat smoke"	24	00	24	19	05
Metal danger sign "Skull"	24	00	24	19	05
Sticker "not allowed drink eat smoke"	131	100	231	111	120
Danger Sticker "Skull"	153	100	253	100	153
Procedures for Insecticide Transportation	203	81	284	230	54
Procedures for Insecticide Storage	12	89	101	28	73
Booklet on Structure Definition	00	519	519	0	519

ANNEX B: IRS CAMPAIGN VEHICLE USAGE

TABLE B-1: MOPTI DISTRICT VEHICLE USAGE, IRS 2017

Mopti District							
Line	**Operational Site**	**Number of Teams (SOP-TL-Sup)**	**Minibus (12-18 Seats)**	**Hard-top 4x4**	**Pickup 4x4**	**Motorbike (2 tires)**	**Taxini**
1	Ascotamb	29	0	0		0	9
2	Diambacourou	15	1	0		15	4
3	Fatoma	16	0	1		16	3
4	Komoguel	43	1	0		0	8
5	Konna	27	0	1		27	4
6	Kontza	11	0	1		11	1
7	Korientzé	17	1	1		17	3
8	Medina coura	15	0	0		0	4
9	Niacongo	7	0	1		7	1
10	Sampara	13	1	0		13	3
11	Sendegue	15	0	1	2	15	0
12	Sévaré 2	43	0	0		0	8
13	Sévaré 3	24	1	0		0	5
14	Socoura	29	0	0		29	4
15	Somadougou	18	0	1		0	3
16	Soufouroulaye	10	1	1		0	4
17	Toguel	13	0	0		0	6
18	Tongorongon	10	0	0		10	2
19	Goulombo	6	1	0		6	2
20	Manako	6	0	0		6	1
Total		**367**	**7**	**8**	**2**	**172**	**75**

TABLE B-2: DJENNE DISTRICT VEHICLE USAGE, IRS 2017

Djenne District							
Line	**Operational Site**	**Number of Teams (SOP-TL-Sup)**	**Minibus (12-18 Seats)**	**Hard-top 4x4**	**Pickup 4x4**	**Motorbike (2 tires)**	**Taxini**
1	Bounguel	11	0	0		11	0
2	Djenné Central	29	0	0		4	4
3	Konio	15	1	0		0	1
4	Madiama	15	1	0		0	0
5	Mougna	28	1	0	3	0	0
6	Senossa	13	0	1		0	0
7	Sofara	23	0	0		5	5
8	Torokoro	6	0	1		0	1
9	Yebe	9	0	1		0	0
Total		**149**	**3**	**3**	**3**	**11**	**11**

The Minibuses, Hardtops, Motorbikes, and Taxinis were used for spray operator's transportation.

Pickup trucks were used for coordination and logistics.
District coordinators were authorized to dispatch vehicles to meet the needs in the field.

TABLE B-3: BANDIAGARA DISTRICT VEHICLE USAGE, IRS 2017

Bandiagara District							
Line	Operational Site	Number of Teams (SOP-TL-Sup)	Minibus (12-18 Seatts)	Hard-top 4x4	Pickup 4x4	Motorbike (2 tires)	Taxini
1	DE	19	0	1	3	0	3
2	MORY	19	1			19	0
3	DIANGASSAGOU	21		1		21	0
4	NANDO	27	1			0	3
5	KANI-GOGOUNA	27		1		27	0
6	KENDIE	33	1			33	0
7	NINGARI	21	0	1		21	0
8	OUO	19	1			19	0
9	BENDIELY	9	0	1		9	0
10	KAMBA	7	1	0		7	0
11	SONGHO	12		1		0	3
12	IRELY	10	1			10	0
13	SANGHA	18	0	1		18	0
14	KORI-MAOUNDE	11	1	0		11	0
15	IBY	9	0	1		9	0
16	BANDIAGARA CENTRAL	45	1	0		0	9
17	GOUNDAKA	22.6	0	1		23	0
18	DOUROU	31	1	0		31	0
19	DJIGUIBOMBO	10	1	0		0	2
		371	**10**	**9**	**3**	**258**	**20**

The Minibuses, Hardtops, Motorbikes, and Taxinis were used for spray operator's transportation.
Pickup trucks were used for coordination and logistics.
District coordinators were authorized to dispatch vehicles to meet the needs in the field.
The rows highlighted in yellow represent the implementation areas with mobile soak pits.

TABLE B-3: BANKASS DISTRICT VEHICLE USAGE, IRS 2017

Bankass District							
Line	**Operational Site**	**Number of Teams (SOP-TL-Sup)**	**Minibus (12-18 Seatts)**	**Hard-top 4x4**	**Pickup 4x4**	**Motorbike (2 tires)**	**Taxini**
1	BANKASS CENTRAL	39	0	0		0	5
2	BAYE	15	1	0		0	0
3	DIALLASSAGOU	25	2	0	3	0	0
4	NIAMIAN	7	1	0		0	0
5	PISSA	12	1	0		0	0
		98	**5**	**0**		**0**	**5**

The Minibuses, Hardtops, Motorbikes, and Taxinis were used for spray operator's transportation.
Pickup trucks were used for coordination and logistics.
District coordinators were authorized to dispatch vehicles to meet the needs in the field

ANNEX C: DESCRIPTION OF 2017 TRAININGS

TABLE C11-1: TYPE OF TRAINING

Type of Training	From	To	No. of Trainings	Description
Training of Trainers for Spray Campaign Operations	July 13	July 17	1	This was a refresher course for most of the district coordinators but a first IRS experience for DTCs.
Spray Operators	July 19	July 23	24 training sites (Bandiagara =7; Bankass=3; Djenne=5; Mopti=9)	The training covered spray techniques and rinsing of spray pumps, scheduling and the methods for completing the 2017 IRS campaign with Malian government staff, and the correct ways for working with households before, during, and after spraying. 760 people participated in the training. Spray simulation concluded the last training day.
Supervisors and Team Leaders	July 15	July 17	1, all disticts	The session was led by the AIRS Mali team and focused on supervision tasks, strategies, and the responsibilities and tasks of the Supervisors and Team Leaders.
Logistics	July 18	July 20	1, all disticts	Secondary warehouse managers were trained on how to manage the stocks of materials and equipment at their disposal.
Washers	July 21	July 21	4 (one per district)	Washers were trained on best practices of washing and rinsing.
Store Security Guards	July 21	July 21	4 (one per district)	Guards were trained on their roles and responsibilities in monitoring stores.
Radio Hosts	June 20	June 22	1	Hosts of community radio stations were trained on the IEC messages to disseminate and on how to fill out the monitoring cards of broadcast messages.
District Training Teams	July 23	July 23	1	Teams composed of 4 local coordinators, 4 logistics managers, and 2 central warehouse managers were oriented on their mission, tasks, and responsibilities.
Data Clerks	July 21	July 23	1	Data clerks were familiarized with the IRS campaign data entry forms and the database used for uploading all IRS campaign data. The clerks also practiced entering data.
Security Transportation Drivers	July 18	July 18	1, all disticts	Drivers hired to transport IRS commodities and spray teams learned correct methods to secure and safely handle insecticides. Participants learned how to manage an insecticide spill and safely clean vehicles after each day of the IRS campaign. Emphasis was placed on raising awareness of the use of safety belts by all passengers and strict compliance with other aspects of the Traffic rules.
Medical Staff who Manage Insecticide Intoxication Cases	June 19	June 19	1, all disticts	The training reviewed the correct protocol and methods for treating any SOP who was injured or fell sick from his/her activities in the IRS campaign. The DTCs were asked to present this information to the district health staff.
Entomology Technicians	May 08	May 11	1	Entomological technicians were trained in mosquito field collection practices, insectary maintenance, identifying mosquito

				breeding sites, larval and pupae collection, identification of Anopheles larvae from Culiciene, and managing HLCs.

ANNEX D: MAP SAMPLES

FIGURE D-1: A SAMPLE GUIDE PAGE FROM THE ATLAS.

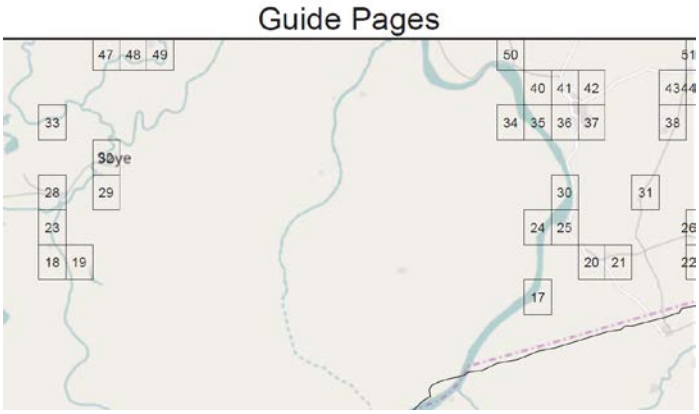
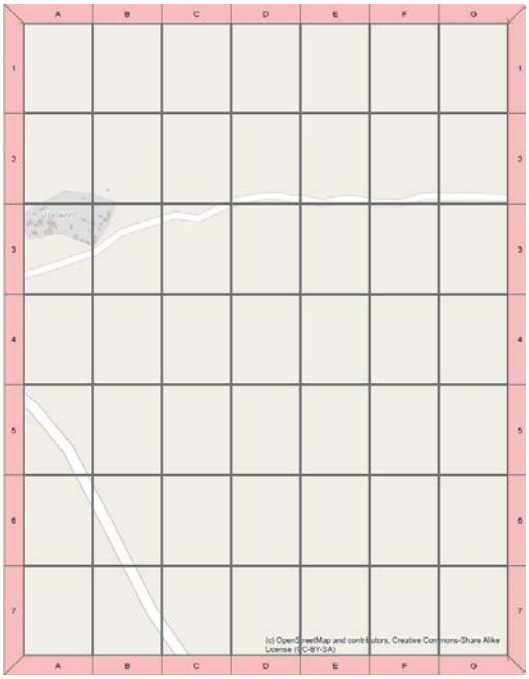


FIGURE D-2: A SAMPLE DETAILED MAP PAGE FROM THE HOT ATLASES.



The guide pages show the configuration of the detailed maps within a grid section of a given district. The numbers in the boxes on the guide page correspond to the individual page number for each detailed map. The atlas for Mopti District alone contained over 400 individual maps such as the one shown in Figure D-2. The scale and level of detail is appropriate but the map sections were determined by a grid, cutting off rather than encompassing target villages. There were no labels or landmarks for easy orientation, nor was there any intuitive way to determine which page the reader should refer to view the map of an adjacent area without referring back to the guide page (of which there are 15).

ANNEX E: PSECA FINDINGS AND RECOMMENDATIONS

TABLE E-1: PSECA FINDINGS: MOPTI DISTRICT

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Manako	– The storeroom is located an adequate distance from sensitive receptors – The storeroom has a leak-free floor and roof – The washing area is near the storeroom – The doors and windows are in good a state	– The windows are absent security bars and screens – Antidote unavailable at the local health facility – The store is not fenced	– Install security bars and screens in the windows – MOH must provide the antidote to the local health facility, – Build the washing area and fixed soak pit – Fence the store, soak pit, and wash area	May 17
Fatoma	– A room (7/10 m) of the building was given as storage for insecticide – The wash area is located near the store – The site is located an adequate distance from sensitive receptors – The roof is in a good state – The door and the windows are in a good state	– Cracks in the floor of the store – The windows are absent security bars and screens – Absence of double lock at the door – Antidote unavailable at the local health facility – The store is not fenced	– Repair the cracks in the floor of the store – Install security bars and screens in the windows – Double lock the door – Provide the antidote to the local health facility – Build the washing area and fixed soak pit – Fence the store, soak pit, and washing area	May 17
Sampara	– A house of two rooms available for the IRS storeroom – The washing area is near to store – The store and washing area are located an adequate distance from sensitive receptors – The door in a good condition	– Cracks in the floor and the wall of the store – The windows are absent security bars and screens – The roof in need of repair – The door does not lock – Antidote unavailable at the local health facility – The store is not fenced	– Repair the floor of the store – Install security bars and screens in the windows – Repair the roof of the store – Double lock doors – Provide the antidote to the local health facility – Build the washing area and fixed soak pit – Fence the store, soak pit, and the washing area	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Niacongo	– A house of two room available for IRS store – Store and washing area located an adequate distance from sensitive receptors – Storeroom has the roof and the floor in good condition – The store is fenced – The doors and the windows are in a good state – The washing area is near the store	– The windows are absent security bars and screens – The door does not lock – Antidote unavailable at the local health facility	– Install security bars and screens in the windows – Install double locks on doors – Provide antidote to local health facility – Build the washing area and fixed soak pit	May 17
Somadougou	– A house of five rooms available to be IRS store – The storeroom and washing area located an adequate distance from sensitive receptors – Store surrounding area cleaned – The store is near the washing area site – The doors and windows are in good state	– Cracks in the storeroom floor – Absent security bars and screens in the windows – The store is not fenced – Antidote unavailable at local health facility – The washing area not built	– Repair the cracks in the floor of storeroom – Install security bars and screens in the windows – Provide the antidote to local health facility – Build the washing area and fixed soak pit – Fence the store and the washing area	May 17
Soufroulaye	– The store is located an adequate distance from sensitive receptors – The store has a leak-free floor and roof – The site of washing area is near to the store – The doors and windows are in good state – Windows in the store have security bars an screens – Toilet at the site	– Antidote unavailable at local health facility – The store is not fenced	– Repair the roof on the store – Provide the antidote to local health facility – Build the washing area and fixed soak pit – Fence the store, soak pit, and wash area	
Korientzé	– A house of alone room of 8/12 available to be IRS store – The store is located an adequate distance from sensitive receptors – Store is near to washing area – Storeroom well ventilated	– The windows are absent security bars and screens – Antidote unavailable at local health facility – Cracks in the floor of the store – Part of the roof taken away by the wind – The store is not fenced	– Install security bars and screens in the windows – Provide the antidote to the local health facility – Repair cracks in floor of the store – Repair the roof of the store – Build washing area and fixed soak pit – Fence the store and washing area	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Goulombo	– The site of the store and the FSP are identified – The store is located an adequate distance from sensitive receptors	– Antidote unavailable at the local health facility – The community promise to build the storeroom	– Ministry of must provide the antidote to the local health facility – Build the store before the end of march – Build and fence the washing area and fixed soak pit	May 17
Sendegué	– A house of four rooms available to be IRS store – The store is located an adequate distance from the sensitive receptors – Storeroom has a roof in good condition – The store is fenced	– The windows are absent security bars and screens – The door is missing padlocks – Cracks in the floor of storeroom – Antidote unavailable at the local health facility	– Repair the storeroom floor – Install security bars and screens in the windows – Provide two padlocks at the door – Build the washing area and fixed soak pit – Provide the antidote to the local health facility	May 17
Kontza	– A house of alone rooms available to be IRS store – The store and washing area located an adequate distance from sensitive receptors – Storeroom has the floor and roof in a good state	– Absent security bars and sceens in the windows – Antidote unavailable at the local health facility – The door and windows missing shutters – The store is not fenced	– Repair the floor of the store – Install security bars and screens in the windows – MOH must provide the antidote to the local health facility – Install shutters at the door and windows – Build the washing area and fixed soak pit – Fence the store, soak pit, and the washing area	May 17
Konna	– A house of five rooms available to be IRS store – The store located an adequate distance from sensitive receptors – The doors and windows are in good state – The floor and roof are in good condition – The washing area is near the store – The store and washing area are fenced	– The windows are absent security bars and screens – Antidote unavailable at the local health facility	– Install security bars and screens in the windows – Provide antidote to local health facility – Build the washing area and fixed soak pit	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Diambacourou	– A house of three rooms available to be IRS store – The store and washing area are located an adequate distance from sensitive receptors – The store has a roof in good condition – The washing area is near the store	– The windows are absent security bars and screens – The store is not fenced – Antidote unavailable at the local health facility – Cracks in the floor – The wall outside and inside of store is not coated – The store is not fenced	– Install security bars and screens in the windows – Fence the store – Provide antidote to the local health facility – Repair the floor of the store – coast the wall inside and outside of storeroom – Build and fence the washing area and fixed soak pit	May 17
Tongorogon	– The store is located an adequate distance from sensitive receptors – The site of washing area is near the store – The store roof is in good state	– Antidote unavailable at the local health facility – The store is not well ventilated – The roof needs repair – The store is not fenced	– Provide antidote to the local health facility – Install windows to the store for ventilation – Repair the roof – Build and fence the washing area and fixed soak pit	June 25
Sevaré II	– A house of alone room but big available to be IRS store – The store is located an adequate distance from sensitive receptors – The store has the roof in good condition – The windows have secuirty bars – The antidote is available at the local health facility – The washing area is near the store – The wall outside and inside is well roughcasted	– Cracks in the floor and wall of store – The windows are not screened – The window needs to be well fixed – The store is not fenced	– Repair the floor and the wall of store – Install security bars and screens in the windows – Repair the windows – Build and fence the washing area and fixed soak pit	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Socoura	– A house of alone room but big available to be IRS store – The store and the washing area are located an adequate distance from the sensitive receptors – The store and the washing area are fenced and well cleaned – Windows have security bars and screens – The store is well aerated and ventilated – The wall outside and inside well roughcasted	– The floor requires repair – Padlocks are missing from the doors – Antidote unavailable at the local health facility – One window missing leaf	– Repair store floor – Padlocks the doors – Provide the antidote to the local health facility – Put missing leaf in the windows – Build the washing area and fixed soak pit	May 17
Sevaré III	– A house of alone room available to be IRS store – The store is located an adequate distance from sensitive receptors – Store roof is in good state – The wall outside and inside is well roughcasted – The store fenced	– Cracks in the floor of the store – The store is absent windows – The store neeeds to separate from others building – Antidote unavailable at the local health facility – Only one padlock available	– Repair the floor – Install security bars and screens in the windows – Fence the store to separate it from others buildings in the big fence – Install a second padlock – Provide antidote to the local health facility – Build the washing area and FSP in the fence of warehouse of Mopti	May 17
Medina Coura **Toguel**	– A house of six rooms available to be IRS store – This site is located in a big fence – The store and the washing area are located an adequate distance from sensitive receptors – The store and the washing area are fenced and well cleaned – The store is well aerated and ventilated – The wall outside and inside is well roughcasted – The both health areas share the same building	– Cracks in the wall and the floor of the store – The doors are missing padlocks – Antidote unavailable at the local health facility – The door needs to be repaired	– Repair store floor – Insall padlocks at the doors – Provide antidote to the local health facility – Move the washing areas and FSP of Toguel, Komoguel and Ascotamb on this site, because it site is big and the others health areas have not a place – Build the washing areas and fixed soak pits for these health areas	June 25
Komoguel	– A house of five rooms and big available to be IRS store – The store and the washing area are located an adequate distance from sensitive receptors	– The floor in need of repair – The doors are missing padlocks – Antidote not available to Ascotamb	– Repair store floor – Install padlocks to the doors – Provide the antidote to Ascotamb health area	June 25

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Ascotamb	– Antidote available to Komoguel – The store is well aerated and ventilated – The wall outside and inside well roughcasted			

TABLE E-2: PSECA FINDINGS: BANDIAGARA DISTRICT

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Dourou	– The store is located an adequate distance from sensitive receptors – The site of washing area is near the store – The doors and windows are in a good state	– The windows are absent security bars and screens – antidote unavailable at the local health facility – The store does not have a leak-free floor – The door is not padlocked – The store is not fenced	– Install security bars and screens in the windows – Repair store roof – Provide antidote to local health facility – Repair the store floor – Install padlocks to the doors – Build and fence the washing area and fixed soak pit	May 17
Bandiagara	– Two houses of five each store available to be IRS storerooms – The wash area is near the store – The site is located an adequate distance from sensitive receptors – The roof is in the good state – The store has a leak-free floor – The door and the windows are in a good state – Antidote available at the local health facility	– The windows are absent security bars and screens – Absence of double lock at the door – The store is not fenced	– Install security bars and screens in the windows – Install the double lock to the door – Build the washing area and fixed soak pit – Fence the store and washing area	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Iby	– A house of two rooms available to be IRS storeroom – The site of the washing area is near the store – The roof is in a good state – The store and washing area are located an adequate distance from sensitive receptors – The door in a good condition	– Cracks in the floor and the wall of the store – The windows are absent security bars and screens – The door reuires a padlock – Antidote unavailable at the local health facility – The store is not fenced	– Repair the floor and wall of the store – Install security bars and screens in the windows – Install double locks to the door – Provide antidote to the local health facility – Build the washing area and fixed soak pit – Fence the store and the washing area	May 17
Irely	– The store is located an adequate distance from sensitive receptors	Antidote unavailabe at local health facility	– Provide antidote to the local health facility – Build and fence washing area and fixed soak pit	May 17
Sangha	– Windows have security bars and screens – The door has double padlock – Antidote available at the local health facility – The store and washing area located an adequate distance from sensitive receptors – Storeroom has a roof and floor in good condition – The store is fenced – The doors and the windows are in a good state – The site of the washing area is near the store	– None	– Build the washing area and fixed soak pit	May 17
Kamba	– A house of alone rooms (3,5/6 m) available to be IRS store – The store and washing area located an adequate distance from sensitive receptors – Store surrounding area cleaned – The doors and windows are in a good state	– The store does not have a leak-free floor – The windows are absent security bars and screens – The store is not fenced – Antidote unavailable at the local health facility – Impossible to dig at depth of one meter for the soak pit because of the rocky ground	– Repair the floor of storeroom – Install security bars and screens in the windows – Provide antidote to local health facility – Fence the store and washing area – Use MSPand Tyvek suits	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Kendié	– A house of four rooms available to be IRS store – The store is located an adequate distance from sensitive receptors – The store is near the washing area – Strorerоom well aerated and well ventilated – The store is fenced	– The windows are absent security bars and screens – Antidote unavailable at the local health facility – Cracks in the floor of the store – Windows (2) missimg the leaf – The door does not have a padlock	– Install security bars and screens in the windows – Provide antidote to local health facility – Repair cracks in floor of the store – Install leaf in the windows – Install the double padlocks at the door – Build washing area and fixed soak pit – Fence the store and washing area	May 17
Bendiely	– A house of two rooms available to be IRS store – The store is located an adequate distance from sensitive receptors – Storeroom has a roof in a good state	– Repair the cracks in the floor of store – The store is not aerated and ventilated – Antidote unavailabe at the local health facility – Absent security bars ans screens in the windows – The soil is rocky, impossible to dig at depth of one meter for the fixed soak pit – The store is not fenced	– Repair the floor of storeroom – Install additional windows – Install security bars and screens in the windows – Provide antidote to local health facilities – Use MSP and the Tyvek suit – Fence the store	May 17
Mory	– A house of alone room available to be IRS store – The store is located an adequate distance from sensitive receptors – Storeroom has a roof in good condition – Windows and door are in good condition	– The windows are absent security bars and screens – Absent padlocks on the doors – Cracks in the floor of storeroom – Antidote unavailable at the local health facility – The soil is rocky, impossible to dig at depth of one meter for the fixed soak pit – The store is not fenced	– Install security bars and screens in the windows – Install two padlocks at the door – Repair the storeroom floor – Provide antidote to local health facility – Use MSP and Tyvek suit – Fence the store	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Deh	– A house of two rooms available to be IRS store – The store and washing area located an adequate distance from sensitive receptors – Storeroom has a floor in good condition – Windows have security bars	– Repair storeroom roof – Windows are not screened – Antidote unvailable at the local health facility – The store is not fenced	– Repair the roof of the store – Screen the windows – Provide antidote to local health facility – Build washing area and fixed soak pit – Fence the store and the washing area	May 17
Ningari	– A house of alone rooms but very big available to be IRS store – The store is located an adequate distance from sensitive receptors – The doors and windows are in good condition – The roof is in good condition	– Windows are not screened – Antidote unavailable at the local health facility – Cracks in the floor of the store – The soil is rocky and impossible to dig at the depth of one meter for the fixed soak pit – The store is not fenced	– Install window screens – Provide antidote to local health facility – Repair storeroom floor – Use MSP and Tyvek suit – Fence the store	May 17
Kani Gogouna	– A house of two rooms available to be IRS store – The store and washing area are located an adequate distance from sensitive receptors – The store has a roof and floor in good condition – The washing area site is near the store – The store is fenced	– Windows absent of security bars and screens – Antidote unavailable at the local health facility	– Install security bars and screens in the windows – Provide antidote to local health facility – Build and fence washing area and fixed soak pit	May 17
Nando	– A house of two rooms available to be IRS store – The store is located an adequate distance from sensitive receptors – The washing area is near the store – The store has a roof in good condition	– Antidote unavailable at the local health facility – The store does not have a leak-free floor – The store is not fenced – Absent leaf in windows – Windows absent secuirty bars and screens	– Provide antidote to local health facility – Repair storeroom floor – Install leaf in the windows – Install security bars and and screens in the windows – Build and fence the washing area and fixed soak pit	June 25

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Diangassagou	– A house of alone room but big available to be IRS store – The store is located an adequate distance from sensitive receptors – The store has a roof in good condition – The washing area is near the store – The wall outside and inside is well roughcasted	– Cracks in the floor and wall of store – The windows are absent security bars and screens – The store is not fenced – Antidote unavailable at the local health facility	– Repair the floor and the wall of store – Install security bars and screens in the windows – Provide antidote to local health facilty – Build and fence the washing area and fixed soak pit	May 17
Ouo	– A house of two room but big available to be IRS store – The store and the washing area are located an adequate distance from sensitive receptors – The store is well aerated and ventilated – The wall outside and inside well roughcasted	– Repair storeroom floor – Absent padlocks on the doors – Antidote unavailable at the local health facility – The windows are absent security bars and screens – The soil is sandy, impossible to correctly build a fixed soak pit – The store is not fenced	– Repair storeroom floor – Install padlocks at the doors – Provide antidote to the local health facility – Install security bars and screens in the windows – Use MSP and Tyvek suit – Fence the store	May 17
Djiguibombo	– A house of two rooms available to be IRS store – The store is located an adequate distance from sensitive receptors	– The store does not have a leak-free floor – Absent door and window leaf – The store is not fenced – Antidote unavailable at the local health facilty – The windows are absent security bars and screens – The soil is rocky, impossible to dig at the depth of one meter for the fixed soak pit	– Repair the storeroom floor – Install leaf at the window and door – Provide antidote to local health facility – Install security bars and screens in the windows – Use MSP and Tyvek suit	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Songho	– A house of three rooms available to be IRS store – The store and washing area are located an adequate distance the sensitive receptors – The store and washing area are fenced and well cleaned – Store is well aerated and ventilated	– The store does not have a leak-free floor – The windows of the store missing shutters – Absent door padlocks – Antidote unavailable at the local health facility	– Repair storeroom floor – Install additional windows and shutters at the store – Provide the antidote to local health facility – Install double padlock at the door – Build the washing areas and fixed soak pit for the health areas	May 17
Kori-Maounde	– A house of two rooms and big available to be IRS store – The store and washing area are located an adequate distance from sensitive receptors	– The store does not have a leak-free floor – Absent store windows – Absent padlocks for the doors – Antidote unavailable at the local health facilty – Store is not fenced – The soil is rocky, impossible to dig at the depth of one meter for the fixed soak pit	– Repair storeroom floor – Install additional windows – Install door padlocks – Provide the antidote to local health facilty – Use MSP and Tyvek suit – Fence the store	May 17
Goundaka	– A house of three rooms available to be IRS store – The store and washing area are located an adequate distance from sensitive receptors – The store and washing area are fenced and well cleaned – The store os well aerated and ventilated – The windows have security bars	– Antidote unavailable at the local health facility – Cracks in the floor of the store – The store is not fenced – The windows are not screened	– Provide the antidote to local health facility – Repair the storeroom floor – Install screens in the windows – Build and fence the washing area and fixed soak pit	

TABLE E-3: PSECA FINDINGS: DJENNE DISTRICT

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Djenné	– A house of alone big 8/13 m room available to be IRS store – The windows have seurity bars and screens – The door has double padlocks – Antidote available at the local health facility – The store and washing area are located an adequate distance from sensitive receptors – Storeroom has a roof in good condition – The store is fenced – The doors and the windows are in good condition – The washing area is near the store	– Cracks in the floor of the store	– Repair the storeroom floor – Build the washing area and fixed soak pit – Fence the store and wash area	May 17
Bonguel	– The site of the store and the washing area are located an adequate distance from sensitive receptors	– Antidote unavailable at the local health facility – The community promise to build the storeroom	– Provide the antidote to local health facility – Build the storeroom before the end of March – Build the washing area and fixed soak pit – Fence the store and washing area	May 17
Sofara	– A house of three rooms available to be IRS storeroom – The washing area is near the store – The store roof is in good condition – The sites of store and washing area are located an adequate distance from sensitive receptors	– Cracks in the floor and the wall of the store – The windows are absect security bars and screens – The door has padlock – Antidote unavailable at local health facility – The store is not fenced – The door needs repair	– Repair the floor and wall of the store – Install security bars and screens in the windows – Install double locks on the door – Provide the antidote to the local health facility – Build the washing area and fixed soak pit – Fence the store and the washing area – Repair the door	May 17
Torokoro	– A house of two rooms available to be IRS store – The door is in good state – The sites of store and washing area located an adequate distance from the sensitive receptors – The site of the washing area is near to store	– Cracks in the floor of store – The store is absent windows – Antidote unavailable at the local health facility – The store is not fenced	– Repair the store floor – Install the window in the store – Provide the antidote to the local health facility – Build and fence the washing area and fixed soak pit	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Konio	– A house of two rooms available to be IRS store – the sites of store and washing area located an adequate distance from the sensitive receptors – Store surrounding area cleaned – The doors and windows are in good state – The floor in a good state	– The roof needs repair – Windows are not screened – The store is not fenced – Antidote unavailable at the local health facility	– Repair the floor of storeroom – Install screens in the windows – Provide the antidote – Fence the store and the washing area – Build the washing area and fixed soak pit	May 17
Madiama	– A house of alone room but very big available to be IRS store – The windows have screens and security bars – The door has double padlock – The store and washing area are located an adequate distance from sensitive receptors – Storeroom has the roof in good condition – The doors and the windows are in a good state – The site of the washing area is near the store	– Cracks in the floor of store – The store is not fenced – Antidote unavailable at the health facility	– Repair the floor – Build washing area and fixed soak pit – Fence the store and washing area – Provide the antidote to the local health facility	May 17
Senossa	– A house of alone room but very big available to be IRS store – The windows have screens and security bars – The door has double padlocks – The sites of store and washing area located an adequate distance from sensitive receptors – Storeroom has the roof in good condition – The doors and the windows are in a good state – The site of the washing area is near to storestore	– Cracks in the floor of store – Store is not fenced – Antidote unavailable at the local health facility	– Repair the floor – Build washing area and fixed soak pit – Fence the store and washing area – Provide the antidote to the local health facility	May 17

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Yébé	– A house of alone room available to be IRS store – The sites of store is located an adequate distance from sensitive receptors – Storeroom has the roof in good state – The windows and door are in the good state – The door is double locked – The store is located in the fence – The washing area is close to the store	– Windows absent screens and security bars – Cracks in the floor of storeroom – Antidote unavailable at the local health facility	– Install window screen and security bars – Repair the floor – Provide the antidote to the local health facility – Build washing area and fixed soak pit	May 17
Mougna	– A house of alone room available to be IRS store – The store and washing area are located an adequate distance from sensitive receptors – Storeroom has the roof in good state – The windows have security bars – The store is fenced	– The storeroom floor needs repair – Window absent screens – Antidote unvailable at the local health facility Padlock absent from the door	– Repair the floor of the store – Install window screens – Provide the antidote to the local health facility – Install double padlocks at the door – Build the washing area and fixed soak pit – Fence the store and the washing area	May 17

TABLE E-4: PSECA FINDINGS: BANKASS DISTRICT

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Baye	– A house of alone room available to be IRS store – The sites of store and washing area located an adequate distance from the sensitive receptors – Storeroom has the roof in good condition – The store is located in fence – The doors and the windows are in a good condition – The site of the washing area is near to store	– Cracks in the floor and wall of the store – Window absent screens and security bars – Door cannot lock Antidote unavaialbe at the local health facility	– Repair the floor and the wall of the store – Install window security bars and screens – Install double locks – Build the washing area and fixed soak pit – Provide the antidote to the local health facility	June 24

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Pissa	– A house of alone room 7/10 m available to be IRS store – The sites of store and washing area located an adequate distance from the sensitive receptors – Storeroom has the roof in good condition – The windows are barred and well aerated – The doors and the windows are in a good condition – The site of the washing area is near the store	– Cracks in the floor and wall of the store – Windows absent screens – The store is not fenced – Absent padlock at the the door Antidote unavailable at the local health facility	– Repair the floor and wall of the store – Install window screens – Install padlock at the door – Provide the antidote to the local health facility – Build the washing area and fixed soak pit – Fence the store and washing area	June 24
Niamia	– A house of two big rooms available to be IRS storeroom – The washing area is near the store – The sites of store and washing area are located an adequate distance from sensitive receptors	– The store does not have a leak-free floor and roof – The wall outside of the store are not roughcasted – Windows absent security bars and screens – Antidote unavailable at the local health facility – The store is not fenced	– Repair the floor and roof of the store – Install window security bars and screens – Install double locks in the door – Provide the antidote to the local health facility – Build and fence the washing area and fixed soak pit	June 24
Diallassagou	– A house of two rooms available to be IRS store – The store and washing area are located an adequate distance from sensitive receptors – The washing area is near the store – The rooms are well aerated and ventiled – The roof is in a good condition	– Cracks in the floor of store – Windows absent security bars and screens – The windows and door need repair – The door does not have double locks – Antidote unavailable at the local health facility – The store is not fenced	– Repair the floor – Install window security bars and screens – Repair the door and windows – Pprovide the antidote to the local health facility – Build and fence the washing area and fixed soak pit	June 24

Sites	Strengths	Areas for Improvement	Recommendations/ Repair Needed	Repair Deadline
Bankass	– A house of alone room but very big available to be IRS store – Antidote available at the local health facility – The store and washing area located an adequate distance from sensitive receptors – Storeroom has a roof in good condition – The doors and the windows are in a good state – The site of the washing area is near to store – The store is fenced – The roof and floor are in good condition	– Windows absent security bars and screens – The door is missing padlocks	– Install security bars and screens – Install padlocks on the door – Repair the floor – Build washing area and fixed soak pit	May 17

ANNEX F: ENVIRONMENTAL MITIGATION AND MONITORING REPORT (EMMR)

Implementing Organization: AIRS MALI

Geographic location of USAID-funded activities: Bandiagara, Bankass, Djenne, and Mopti districts

Period covered by this Reporting Form and Certification: September 2017

Mitigation Measure	Status of Mitigation Measures	Outstanding issues relating to required conditions	Remarks
1a. Pre-contract inspection and certification of vehicles used for pesticide or spray team transport.	Inspection of all vehicles and taxinis involved in the AIRS campaign took place on 18 July 2017.		The taxini has a particular status in Mali. Checklists were modified to include taxinis. All taxini were inspected and approved by the ECO before use by the AIRS campaign.
1b. Driver training	All drivers received training on 17 July 2017 on correct methods to secure and safely handle insecticides (including taxini drivers).		
1c. Cell phone, personal protective equipment (PPE) and spill kits on board during pesticide transportation.	Every driver and each vehicle used for the tansport of insecticides were provided with PPE, spill kits, and first aid kits.		Drivers required to use their personal cell phones during transport of insecticides.

Mitigation Measure	Status of Mitigation Measures	Outstanding issues relating to required conditions	Remarks
1d. Initial and 30-day pregnancy testing for female candidates for jobs with potential pesticide contact.	DTCs completed the pregnancy tests of each female candidate for SOP, team leader, local supervisor, storekeeper, and washer.		All test results were sent to the ECO. The tests were completed during the SOP training, to ensure pregnant women were not recruited for positions with potential pesticide contact.
1e. Health fitness testing for all operators.	Testing completed for each SOP, storekeeper, and team leader.		All test results were sent to the ECO before the start of the campaign.
1f. Procurement of, distribution to, and training on the use of PPE for all workers with potential pesticide contact.	All workers with the potential to come in contact with pesticides were provided with PPE and trained on the proper use of the PPE.		Field supervision by supervisors and team leaders confirmed the appropriate use of PPE to ensure the safety of project personnel.
1g. Training on mixing pesticides and the proper use and maintenance of spray pumps.	SOP traning including pesticide mixing, pump maintenance, and the proper use of spray pumps took place between June 20th and July 20th 2017.		AIRS Mali increased the number of pump mechanics during the campaign to assist SOPs with pump maintenance.
1h. Provision of adequate facilities and supplies for end-of-day cleanup.	The ECO inspected all wash areas and soak pits for end-of-day cleanup prior to the start of the campaign. The inspections included coordinating with the Operations Manager to ensure the provision of adequate facilities and supplies.		The initial and final preseason environmental compliance assessments are designed to ensure facilities and supplies are appropriate for campaign activities.

Mitigation Measure	Status of Mitigation Measures	Outstanding issues relating to required conditions	Remarks
1i. Enforce spray and clean-up procedures.	Spray and clean-up procedures are enforced by the team leaders and supervisors. Enforcement is often captured via supervisory checklists.		Storekeepers have an additional responsibilities overseeing SOPs end-of-day activities.
2a. IEC campaigns to inform homeowners of responsibilities and precautions.	AIRS Mali used radio broadcasts to ensure wide dissemination of IRS spray campaign information.		The roles of local AIRS mobilizers and village local mobilizers are very important. The efforts of the mobilizers helped to reduce spray refusal cases.
2b. Prohibition of spraying houses that are not properly prepared.	SOPs are instructed during training not to spray homes unprepared for spray.		Team leaders oversee structure preparation before spraying. The role of local mobilizers is very important to assist homeowners with preparation before the sprayers arrive.
2c. Two-hour exclusion from house after spraying	Homeowners are informed during mobilization and after spray, to wait two hours before entering the home and to open the door along with the windows.		The homeowners observed two hours before opening the door and windows.
2d. Instruct homeowners to wash itchy skin and go to health clinic if symptoms do not subside.	Homeowners are reminded by SOPs and team leaders to wash itchy skin and go to health clinic if symptoms do not subside.		
3a. Indoor spraying only.	SOPs are trained to spray inside walls of homes only. This training is reinforced by the project teams and onsite supervision.		

Mitigation Measure	Status of Mitigation Measures	Outstanding issues relating to required conditions	Remarks
3b. Training on proper spray technique	The SOP training includes proper spray technique and methods to overcome challenging spray areas. Training is managed by the project teams, COP, and operations manager. Inspections to ensure proper technique are completed by supervisors and the ECO.		Team leaders, supervisors, and the ECO use the Homeowner Preparation and Spray Operator Performance Supervisory Form to note spray technique inspections.
3c. Maintenance of pumps	The pump mechanics were recruited in each district for pump maintenance during the spray campaign.		AIRS Mali increased the number of pump mechanics during the campaign to assist SOPs with pump maintenance.
4a. Choose sites for disposal of liquid wastes, including mobile soak pit sites, according to PMI BMPs.	The initial and final PSECAs completed by the ECO are designed to ensure site locations according to PMI BMP.		
4b. Construct fixed and mobile soak pits with charcoal to adsorb pesticide from rinse water.	FSPs and MSPs were constructed and repaired with charcoal to adsorb pesticide from rinse water.		MSPs and FSPs were constructed with a combination of activated charcoal wood.
4c. Maintain soak pits as necessary during season.	Team leaders and supervisors completed daily inspections to ensure the proper drainage and good condition of soak pits.		Supervisors and team leaders used the End-of-Day Supervisory Form to note soak pit inspections.
4d. Inspection and certification of solid waste disposal sites before spray campaign.	The ECO inspects and certifies solid waste disposal sites during the preseason environmental compliance assessments.		A Ministry of the Environment representative was involved with reviewing the solid waste disposal sites.

Mitigation Measure	Status of Mitigation Measures	Outstanding issues relating to required conditions	Remarks
4e. Monitoring waste storage and management during campaign.	The ECO supervised the collection and the storage of waste at the central warehouses in Mopti and Bankass.		A Ministry of the Environment representative was involved in the supervision waste management.
4f. Monitoring disposal procedures post-campaign.	Monitiring currently underway by ECO according to the waste management plan in each health center.		The current security situation near many of the operations sites has created an unsafe environment for the ECO to actively oversee the post campaign disposal procedures. The ECO has trained members of the health areas with support from a Ministry of the Environment representative on the procedures for proper disposal. The ECO is maintaining contact to monitor the progress.
5a. Maintain records of all pesticide receipts, issuance, and return of empty sachets/bottles.	Records of all pesticide receipts, issuance, and return of empty bottles are recorded in the project stock card and dispatch record for insecticides and empty bottles.		The logistic supervisors inspect the insecticide stores to ensure stock card and dispatch records are maintained.
5b. Reconciliation of number of houses sprayed vs. number of sachets/bottles used.	Inspection and toolkit forms used by supervisors for reconciliation.		A Ministry of the Environment representative was involved in this supervision.
5c. Visual examination of houses sprayed to confirm pesticide application.	Visual examinations of the houses sprayed were completed by the team leader, COP, operations manager, entomological coordinator, and ECO.		

Mitigation Measure	Status of Mitigation Measures	Outstanding issues relating to required conditions	Remarks
5d. Perform physical inventory counts during the spray season.	Physical inventory counts were completed by the COP and operations manager during the spray campaign.		

ANNEX G: PMI AIRS MALI
M&E PLAN INDICATOR MATRIX

Updated: 28 September 2017

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
Component 1: Establish cost-effective supply chain mechanisms and execute logistical plans								
1.1 Procurement								
1.1.1 Number and percentage of insecticide procurements that had a pre-shipment QA/QC test at least 60 days prior to spray campaign	*Data source*: Project records – insecticide procurements *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%
1.1.2 Number and percentage of international insecticide procurements delivered in country, at port of entry, at least 30 days prior to the start of spray operations	*Data source*: Project records – international procurements *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
1.1.3 Number and percentage of international equipment procurements, including PPE, delivered in country, at port of entry, at least 30 days prior to start of spray operations	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%
1.1.4 Number and percentage of local procurements for PPE delivered 14 days before the start of spray operations	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%
1.1.5 Successfully completed spray operations without an insecticide stock-out	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	Completed	Completed	Completed	Completed	Completed	Completed
1.2 In-Country Exemption and Custom Clearance Process								
1.2.1 Complete exemption and clearance process within the minimum 2 weeks	*Data source:* Project records *Reporting frequency:* Each spray campaign	By Spray Campaign	Completed	Completed	Completed	Completed	Completed	Completed
1.3 In-Country Logistics, Warehousing, and Training								
1.3.1 Number and percentage of logistics and warehouse managers trained in IRS supply chain management	*Data source*: Training records *Reporting frequency*: Each spray campaign	By Spray Campaign By Gender	5; 100% M=5 F=0	4; 80% M=4 F=0	4; 100% M=3 F=1	4; 100% M=4 F=0	6; 100% M=6 F=0	6; 100% M=6 F=0
1.3.2 Number and percentage of base stores where physical inventories are verified by up-to-date stock records	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	41; 100%	41; 100%	63; 100%	62; 98%	53; 100%	53; 100%

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
1.3.3 Submit up-to-date inventory records 30 days after the end of each spray campaign	*Data source:* Project records *Reporting frequency*: Each spray campaign	By Spray Campaign	Completed	Completed	Completed	Completed	Completed	Completed
Component 2: Implement safe and high-quality IRS programs and provide operational management support								
2.1 Planning and Design of IRS Programs								
2.1.1 Annual PMI AIRS country work plan developed and submitted on time	*Data source:* Project records *Reporting frequency*: Annually	By Spray Campaign	Completed	Completed	Completed	Completed	Completed	Completed
2.1.2 Percentage reduction in project operational expenses from the previous year,excluding insecticide costs .	*Data source:* Project financial records *Reporting frequency*: Annually	By Spray Campaign	5%	13%[9]	5%	10.44%[10]	5%	2.48%[11]
2.2 Support of Safety and Health Best Practices and Compliance with USAID and Host Country Environmental Regulations								
2.2.1 SEA/letter reports submitted on time based on schedule agreed upon with the-PMI COR team	*Data source*: Project records – submitted SEAs/ letter reports Reporting frequency:	By Spray Campaign	Completed	Completed	Completed	Completed	Completed	Completed

[9] Cost comparison 2014 vs. 2015: the project-wide approach to calculating this indicator is comparing the ratio between Oracle charges for Operations code in two years and the number of structures sprayed in two years. The difference between the two ratios is considered as a percent saved. Insecticide and capital costs are excluded.

[10] Cost comparison 2015 vs. 2016: the project-wide approach to calculating this indicator is comparing the ratio between Oracle charges for Operations code in two years and the number of Health districts sprayed in two years. The difference between the two ratios is considered as a percent saved. Insecticide and capital costs are excluded.

[11] Cost comparison 2016 vs. 2017: the project-wide approach to calculating this indicator is comparing the ratio between Oracle charges for Operations code in two years and the number of Health districts sprayed in two years. The difference between the two ratios is considered as a percent saved. Insecticide and capital costs are excluded. In 2017, the cost savings were achieved by using motorcycles in some areas rather than 4x4 vehicles.

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
	Each spray campaign							
2.2.2 Number of spray personnel trained in environmental compliance and personal safety standards in IRS implementation	Data source: Project records – Training reports Reporting frequency: Each spray season	By Spray Campaign By Gender	584[12]	651[13] M=527 F=124	1,116[14]	1,341[15] M=890 F=451	1,746[16]	1,202[17] M=950 F=252
2.2.3 Number of health workers receiving insecticide poisoning case management training	Data source: Project records – Training reports Reporting frequency: Each spray season	By Spray Campaign By Gender	41	41	63	63	53	53 M=45 F=8
2.2.4 Number of adverse reactions to pesticide exposure documented	Data source: Incident report forms Reporting frequency: Each spray campaign	By Spray Campaign By Residential/ occupational exposure	0	0	0	0	0	0
2.2.5 Number and percentage of soak pits and storehouses inspected and approved prior to spraying	Data source: Project records – Reports submitted by district environmental officers Reporting frequency: Each spray season	By Spray Campaign By Soak Pit By Storehouse	83; 100% 41 soak pits 42 store houses	84; 100% 41 soak pits 43 store houses	106; 100% 63 soak pits 43 store houses	125; 100% 62 soak pits 63 store[18] houses	106; 100% 53 soak pits 53 store houses	106; 100% 53 soak pits 53 store houses

[12] The target was originally 728 across 3 districts but the project was only implemented in 2 districts so the target was reduced to 528
[13] spray operators (391), team leaders (109) , washer (70) , storekeepers (41) , Guard (40)
[14] spray operators (673), team leaders (185) , washer (133) , storekeepers (63) , Guard (62)
[15] spray operators (899), team leaders (191) , washer (128) , storekeepers (62) , Guard (61)
[16] spray operators (1202), team leaders (215) , washer (172) , storekeepers (53) , Guard (104)[17] spray operators (760), team leaders (172) , washer (113) , storekeepers (53) , Guard (104)
[17] spray operators (760), team leaders (172) , washer (113) , storekeepers (53) , Guard (104)
[18] 19 Store houses in Koulikoro District, 21 in Fana District and 23 in Baraoueli District

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
2.3 Conduct Communications Activities and Community Mobilization								
2.3.1 Number of radio spots and talk shows aired	Data source: Project records Reporting frequency: Per spray campaign	By Spray Campaign	5,035	2,532	3,376	3,165	3,587	7,560[19]
2.3.2 Number of IRS print materials disseminated	Data source: Project records Reporting frequency: Semi-annually	By Spray Campaign By Type of printed material and message(s)	50,000	79,860 Caps=1,000 T-Shirt =1,000 IRS Card =67,860 Leaflet =10,000	180,761 Caps=1,500 T-Shirt =1,500 IRS Card =162,761 Leaflet =15,000	195,568 Caps=1,500 T-Shirt =1,500 IRS Card =177,568 Leaflet =15,000	340,407 Caps=1,700 T-Shirt =1,700 IRS Card =322,007 Leaflet=15,000	479,827 Caps=2,850 T-Shirt =2,850 IRS Card =267,243 Leaflet=206,884[20]
2.3.3. Number of people reached with IRS messages via door-to-door mobilization	Data source: Mobilization Data Collection Forms Reporting frequency: Daily per mobilization conducted	By Spray Campaign By Gender	NA[21]	NA	277,598	NA	920,021[22]	823,201[23] M=413,869 F=409,332
2.4 Spray Targeted Structures According to Technical Specifications								
2.4.1 Number of structures	Data source: Previous spray	By Spray	135,717	135,971	242,684[24]	235,394	306,673[25]	239,350[26]

[19] In Mopti the broadcasts were done in 3 languages, 3 broadcast per day, 70 days, 12 radios, (7,560 = 3 X 3 X 70 X 12)
[20] Given that Mopti was a new zone, it was necessary to reinforce the mobilization by filing the leaflets in each of the concessions
[21] Door-to-door mobilization was not done this year. Instead, a mobilizer was sent only 10 days before spray and then accompanied spray teams to assist households in preparation and to sensitize them on post-spray steps.
[22] This is the population expected to be found in the original 306,673 structures, but was later adjusted to 1,074,162 according to the enumeration exercise and adjusted for withdrawal of insecure villages
[23] In this figure the population of the excluded villages has been removed.

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
targeted for spraying	campaign data, enumeration data (targets); Daily Spray Operator Forms (results) Reporting frequency: Daily per spray campaign	Campaign						
2.4.2 Number of structures sprayed with IRS	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign	115,359	133,527	198,040	228,672	260,672	227,646
2.4.3 Percentage of total eligible structures found that were sprayed with a residual insecticide (Spray Coverage)	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign	85%	98.20%	85%	97.14%	85%	95.11%
2.4.4 Number of people residing in structures sprayed (Number of people protected by IRS)	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign By Gender By pregnant women	502,453 M=258,791 F= 243,662	494,205 M=251,863 F= 242,342 13,219	778,884 M=375,724 F= 361,521 19,720	788,922 M=395,387 F= 393,535 20,813	920,021[27] M=454,490 F= 465,531 46,001	823,201[28] M=413,869 F=409,332 23,496

[24] This number was calculated after enumeration in the new district of Fana.

[25] The original target of 306,673 was estimated using population data provided by the Regional Health Directory, but was later adjusted to 257,113 following the enumeration exercise, and further reduced to 251,086 after the AIRS-Mali team was forced to withdraw from some areas due to security.

[26] This is the number of structures found by SOPs.

[27] This is the population expected to be found in the original 306,673 structures, but was later adjusted to 1,074,162 according to the enumeration exercise and adjusted for withdrawal of insecure villages Disaggregated targets (by sex, pregnant women, and children) are not available for this adjusted figure..

[28]This is the actual population protected by the 2017 IRS campaign

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
		By children <5 years old		87,861	131,069	135,754	174,804	131,477
Component 3: Ongoing Monitoring and Evaluation and Quality Control Measures								
3.1 Submit PMI-approved M&E plan to PMI Mali for approval	Data source: Project records Reporting frequency: Semi-annual	By Spray Campaign	Completed	Completed	Completed	Completed	Completed	Completed
3.2 Conduct a post-spray data quality audit within 60 days of completion of spray operations	Data source: Spray operations reports Reporting frequency: Per spray campaign	By Spray Campaign	N/A	N/A	N/A	N/A	Completed	N/A[29]
Component 4: Contribute to Global and Country-Level IRS Policy Setting and Develop and Disseminate Experiences and Best Practices								
4.1 Number of guidelines/checklists/tools related to IRS operations developed or refined with project support	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign By Guideline/ checklist/tool	6	5[30]	5	5	5	5[31]

[29] The PSDQA was scheduled for 2017 prior to the relocation of AIRS activities to Mopti. In consultation with the PMI COR team, the AIRS Mali team decided not to conduct the PSDQA to reduce exposure to insecure areas.
The insecurity that prevails in this area, does not make it possible to ensure the safety of the teams of investigators in certain zones.
[30] IRS Card, Support 4, 5, 7 and 11
[31] IRS Card, Support 4, 5, 7 and 11

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
4.2 Number of articles/best practices documents published	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign By IRS Technical Area	2	1 [32]	1	1	1	1 [33] In progress
4.3 Number of best practice presentations given at national/ regional/international workshops and conferences	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign By IRS Technical Area	1	1	1	1	1	1 [34] In progress
4.4 Number of enterprises engaged through public-private partnerships	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Spray Campaign	2	1	1	1	1	1 [35] In progress

[32] Article: Characterizing the insecticide resistance of *Anopheles gambiae* in Mali. Authors: Cisse Moussa, Keita Chitan, Dicko Abdourhamane, Dengela Dereje, Coleman Jane, Lucas Bradford, Mihigo Jules, Sadou Aboubacar, Belemvire Allison, George Kristen, Fornadel Christen, Beach Raymond, Journal: Malaria Journal

[33] Article: Entomological articles were submitted. We are waiting for their approval.

[34] Presentation on use of village and quartier approach in IRS to the local stakeholders.

[35] SICMA PLAST for disposal of the gloves and other plastic.

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
Component 5: Contribute to the collection and analysis of routine entomological and epidemiological data								
5.1 Support entomological monitoring activities and insecticide resistance strategies								
5.1.1 Number of entomological sentinel sites supported by the PMI AIRS Project established to monitor vector bionomics and behavior (vector species, distribution, seasonality, feeding time, and location)	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	5	5	7	7	7	7
5.1.2 Number and percentage of entomological monitoring sentinel sites measuring all the five primary PMI entomological monitoring indicators	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	2; 40%	2; 40%	3; 47%	3; 47%	3; 47%	4; 57%
5.1.3 Number and percentage of entomological monitoring sites measuring at least one secondary PMI indicator	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	4; 80%	5; 100%	7; 100%	7; 100%	7; 100%	7; 100%
5.1.4 Number and percentage of insecticide resistance testing sites that tested at least one insecticide from each of the four classes of insecticides recommended for malaria	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	5[36]; 100%	4[37]; 80%	5; 71%	4[38]; 57%	5; 100%	15[39]; 100%

[36] Spray sites: Koulikoro, Baroueli; Non-spray sites: Kati, Bla, and Segou
[37] Testing in the site of Segou was not done in the 2015 spray campaign
[38] Testing in the site of Dioila, Bla and Segou was not done in the 2016 spray campaign
[39] All sites: Spray sites + Non-spray sites

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
vector control								
5.1.5 Number of wall bioassays conducted within 2 weeks of spraying to evaluate the quality of IRS	Data source: Entomological reports Reporting frequency: Per spray campaign	By Spray Campaign	10[40] wall bioassays	20 wall bioassays	18 wall bioassays	18 wall bioassays	20 wall bioassays	20 wall bioassays[41]
5.1.6 Number of wall bioassays conducted after the completion of spraying at monthly intervals to evaluate insecticide decay*	Data source: Entomological reports Reporting frequency: Per spray campaign	By Spray Campaign	48 wall bioassays	14 wall for this month	60 wall bioassays	19 wall for this month	20 wall bioassays for this month	20 wall bioassays
5.1.7 Number of vector susceptibility tests for different insecticides conducted in selected sentinel sites*	Data source: Entomological reports Reporting frequency: Per spray campaign	By Spray Campaign By Type of Insecticide	12	6[42]	13	5[43]	13	3[44]

[40] Organochlorine: DDT; Pyrethroid: Lamdacyalothrine 0,05% et Deltamethrine 0,05%; Organophosphorine: Fenitrothion 1 %; Carbamate: Bendiocarb 0,1%

[41] In 2017, the bioassays were conducted within 2 weeks of spray in the sentinel sites but those sites were not sprayed in the first two weeks of the campaign so the results were delayed. We will take this into account in developing a spray calendfar fornext year to ensure the bioassays are conducted within the first two weeks of the campaign.

[42] The six remaining tests will be completed in September 2015

[43] The eight remaining tests will be completed before December 2016

[44] The few remaining tests will be completed by October 2017

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
5.2 Support Epidemiological Malaria Data Collection and Analysis								
5.2.1 Collect routine epidemiological data	Data source: *Project Reports* Reporting Frequency: Annually	By Spray Campaign	Complete	In progress[45]	Complete	In progress[46]	Complete	N/A[47]
5.2.2 Number of targeted health facilities with routine epidemiological malaria data collection supported by the PMI AIRS Project	Data source: Epidemiological reports Reporting frequency: Annually	By Spray Campaign	12[48]	In progress	40[49]	In progress	64	N/A[50]
Component 6 (cross-cutting): Capacity building, knowledge transfer, gender inclusion								
6.1 Increasing the Role of Women and Addressing Gender Barriers								
6.1.1 Number of people trained to deliver IRS in target districts *	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Spray Campaign	642[51]	582[52]	984	1,216[53]	1,523[54]	1,038[55]

[45] The health facility data quality audits were performed in August and once the analysis is complete, the team will hopefully be able to begin epidemiological data collection with the health facilities who performed well.
[46] The team will hopefully be able to begin epidemiological data collection probably in October-November 2016 with the health facilities who performed well.
[47] It was PMI USA who decided not to continue this activity
[48] This number is pending results from the Data Quality Audit that will be performed in June 2015.
[49] The study involves 8 CSCOM each of the 5 health districts in 2016.
[50] It was PMI USA who decided not to continue this activity
[51] Spray operators (425), team leaders (135), supervisors (41), clinicians (41)
[52] Spray operators (391), team leaders (109), supervisors (41), clinicians (41)
[53] Spray operators (899), team leaders (191), supervisors (63), clinicians (63)
[54] Spray operators (1,202), team leaders (215), supervisors (53), clinicians (53)
[55] Spray operators (760), team leaders (172), supervisors (53), clinicians (53)

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
		By Gender Percentage of Women Trained		M=531 F= 51 9%	M=738 F= 246 25%	M=898 F= 318 26.15%	M=940 F= 403 30%	M=901 F= 137 13%
6.1.2 Total number of people trained to support IRS in target districts	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Spray Campaign By Gender Percentage of women trained	1,083	1,171[56] M=1,015 F= 156 13.3%	1,212 M=909 F= 303 25%	1,402[57] M=1040 F= 362 26%	1,514 M=1,060 F= 454 30%	1,125[58] M=955 F= 170 15%
6.1.3 Number of women recruited for IRS employment	Data source: Project records – Recruitment reports reports Reporting frequency: Semi-annually	By Country By Percentage of women recruited	267	241	502	494	571	466[59]
6.1.4 Number of people trained as IRS Training of Trainers	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Gender Percentage of women trained	41	41 M=37 F= 4 9.7%	63 M=56 F= 7 11.11%	63 M=56 F= 7 11.11%	53	53 M=45 F= 8 15%

[56] This number excludes washers (70), drivers (89) and security guards (40)
[57] This number excludes washers (128), drivers (165) and security guards (61)
[58] DTC (53), Coordinators (4), SOPs (760), Data clerks (24), Supervisors (53), Team leaders (172), Logisticians (4), Storekeepers (53) and Warehouse Managers (2)
[59] SOP (101), Team leaders (22), Supervisors (6), Data clerks (19), Storekeepers (14), security guards (2), mobilizers (189) and Washers (113),

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
6.1.5 Total number of people hired to support IRS in target districts	Data source: Project records – Contracts signed Reporting frequency: *Semi-annually*	By Spray Campaign Gender Percentage of women hired	5	12	18	18	24	32[60]
6.1.6 Number of women hired in supervisory roles in target districts (includes site supervisors, team leaders, M&E assistants and others who supervise seasonal staff)	Data source: Project records – Contracts signed Reporting frequency: *Semi-annually*	By Spray Campaign Percentage of women hired	18	17	18	41	18	36[61]
6.1.7 Number of staff (permanent and seasonal) who have completed gender awareness training	Data source: Project records – Training reports Reporting frequency: *Semi-annually*	By Spray Campaign Gender Percentage of women trained	**2,066**	1,370 M=1144 F= 226 16.6%	1,537 M=1,153 F= 384 25%	1,756 M=1,266 F= 490 28%	1,891 M=1,324 F= 567 30%	1,516[62] M=1,234 F= 282 18.6%
6.2.1 Number of government officials trained in IRS oversight	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Gender	10	8 M= 7 F= 1	12 M= 10 F= 3	12 M= 9 F= 3	12 M= 9 F= 3	14 M= 13 F= 1

[60] Logisticians (4) , Pump mechanics (14), Monitor (12) , District Supervisors (2)
[61] Team leaders (22) , Community supervisors (6) , Technical directors of community health center (8)
[62] Team leaders (172) , Community supervisors (53) , SOP (760), Logisticians (4) , Pump mechanics (14), Monitors (12) , District Supervisors (2), Financial Assistant (1), Warehouse manager (2), Entomologist Technicians (15), Data clerks (24), Storekeepers (53), Guards (104), Drivers (167), Washers (113), District Coordinators (4), AIRS Team (16)

Performance Indicator	Data Source(s) and Reporting Frequency	Disaggregate	Annual Targets and Results					
			Year 1		Year 2		Year 3	
			Target	Results	Target	Results	Target	Results
		Percentage of Women Trained		13%	25%	25%	25%	7.7%[63]
6.2.2 Implement all activities outlined in their yearly Capacity Building Action Plan	Data source: Project records – Capacity assessment reports Reporting frequency: Semi-annually	By Spray Campaign	Completed	Completed	Completed	Completed	Completed	Completed
6.2.3 Mali government implements at least one aspect of the IRS program independently.	Data source: Project records – MOUs Reporting frequency: Semi-annually	By Spray Campaign	Completed	Not completed	Completed	Not completed	N/A	N/A

[63] Efforts to increase engagement of women from the government will be made in future campaigns.