



PMI | Africa IRS (AIRS) Project

Indoor Residual Spraying (IRS 2) Task Order Four

2014 MALI END OF SPRAY REPORT

SPRAY CAMPAIGN: JULY 15 – SEPTEMBER 19, 2014

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Abt Associates Inc. 1 4550 Montgomery Avenue 1 Suite 800 North
1 Bethesda, Maryland 20814 1 T. 301.347.5000 1 F. 301.913.9061
1 www.abtassociates.com

2014 MALI END OF SPRAY REPORT

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ACRONYMS

AIRS	Africa Indoor Residual Spraying Project
ASACO	Community Health Associations (Association de Santé Communautaire)
BMP	Best Management Practices
COP	Chief of Party
DNACPN	National Directorate for Sanitation and Pollution Control (Direction National de l'Assainissement, Contrôle de Pollution et de Nuisances)
DTC	Health Center Technical Director (Directeur Technique de Centre)
ECM	Environmental Compliance Manager
ECO	Environmental Compliance Officer
F&A	Finance and Administration
ICC	Inventory Control Cards
IEC	Information, Education, and Communication
IRS	Indoor Residual Spraying
M&E	Monitoring and Evaluation
MRTC	Malaria Research and Training Center
NMCP	National Malaria Control Program (Programme National de Lutte contre le Paludisme)
PID	Pulvérisation Intra Domiciliaire
PMI	President's Malaria Initiative
PPE	Personal Protective Equipment
PSC	Pyrethrum Spray Catch
PSDQA	Post Spray Data Quality Audit
PSECA	Pre Season Environmental Compliance Assessment
RTT	RTT Group, Ltd
SEA	Supplemental Environmental Assessment
STTA	Short-Term Technical Assistance
TOT	Training of Trainers
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Abt Associates supports the implementation of indoor residual spraying (IRS) in Mali on a three-year Africa Indoor Residual Spraying (AIRS) project funded by USAID under the President’s Malaria Initiative (PMI). The objective of the AIRS project is to limit exposure to malaria and reduce the incidence and prevalence of malaria. In November 2011, AIRS established its project office in Bamako and began the implementation of IRS programming. The key objective of AIRS Mali in 2014 was to reduce malaria-associated morbidity and mortality in Barouéli, Bla, and Koulikoro districts by targeting 233,706 structures for IRS in these three districts. AIRS Mali implemented all activities with the involvement of the Malian Government at different levels.

Key lessons learned from the 2014 IRS campaign include:

- Proper spray progress tracking is essential because if frequent rain interrupts implementation, it may be necessary to increase the duration of the spray campaign by a few days.
- E-management is a powerful tool for effective monitoring of insecticides and other equipment and it can help prevent stock outs.
- The involvement of local administrative authorities is important because it increases the success of sensitization activities, and helps convert refusal cases to acceptances.
- The mobile soak pit and “Taxini” pilots were successful and AIRS Mali would like to expand these activities in 2015 to other areas.

TABLE I: AIRS MALI AT A GLANCE

Number of districts covered by PMI-supported IRS in 2014	3 districts: Bla, Barouéli and Koulikoro
Insecticide	Carbamates (bendiocarb) in Koulikoro Organophosphates (Actellic CS) in Bla and Barouéli
Number of structures found by spray operators	233,706
Number of structures sprayed by spray operators	228,123
2014 spray coverage	97.61%
Population protected by PMI-supported IRS in 2014	836,568 (22,352 pregnant women and 154,764 children under five years old)
Dates of PMI-supported IRS campaign	July 15 – August 25, 2014 in Bla and Barouéli August 11 – September 19, 2014 in Koulikoro

Length of campaign	40 days
Number of people trained with USG funds to deliver IRS ¹	911

¹ 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 (IEC) mobilizers, drivers, washers, porters, pump technicians, and security guards.

Résumé (en français)

Sous son contrat "Task Order Four contract" avec l'Agence Internationale de Développement des Etats Unis, (USAID), Abt Associates a assumé le rôle de principal agent d'exécution pour l'Initiative contre le paludisme (PMI) en mettant en œuvre le Projet de pulvérisation Intradomiciliaire au Mali, et dans 13 autres pays d'Afrique subsaharienne. En Novembre 2011, Abt a installé son nouveau projet à Bamako et a débuté la planification de la mise en œuvre de la pulvérisation Intra domiciliaire sous le nom de projet, "African Indoor Residual Spraying (AIRS)" ou Programme Africain de Pulvérisation Intra Domiciliaire au Mali. L'objectif clé de la PID en 2014 au Mali était de réduire la morbidité et la mortalité dues au paludisme dans les trois districts: Koulikoro, Bla et Baroueli par la PID couvrant ainsi environ 233 076 structures éligibles et protéger ainsi autant de personnes que possible dans ces trois districts. AIRS Mali mène toutes ces activités avec l'implication du Ministère de la Santé du Mali à tous les niveaux.

Les principales leçons tirées de la campagne 2014 PID sont les suivantes:

- Le suivi correct des progrès de pulvérisation est essentiel parce que si des pluies fréquentes interrompent la mise en œuvre, il peut être nécessaire d'augmenter la durée de la campagne de pulvérisation de quelques jours.
- L'E-gestion est un outil puissant pour la surveillance efficace des insecticides et d'autres équipements et elle peut aider à prévenir les ruptures de stock.
- L'implication des autorités administratives locales est importante car elle augmente le succès des activités de sensibilisation, et contribue à réduire les cas de refus.
- Le puisard mobile et le "Taxini" ont bien marché et AIRS Mali voudrait étendre cette expérience en 2015 à d'autres aires de santé.

AIRS MALI EN BREF

Nombre des districts couverts par PMI en 2014	3 districts: (Bla, Barouéli et Koulikoro)
Insecticide utilisé pour la PID	Carbamate (bendiocarb) à Koulikoro Organophosphores (Actellic CS) à Bla et Baroueli.
Nombre de structures trouvées par les Opérateurs.	233,706
Nombre de structures pulvérisées par les opérateurs en 2014	228 123
Taux de couverture de la PID 2014	97.61%
Population protégée par PMI en 2014	836 568 (22,352 femmes enceintes et 154 764 enfants de moins de 5 ans).
Dates de la campagne financée par PMI	15 Juillet –25 Août, 2014 à Bla et Baroueli 1 ^{er} Août – 19 Septembre , 2014
Durée de la campagne	40 jours

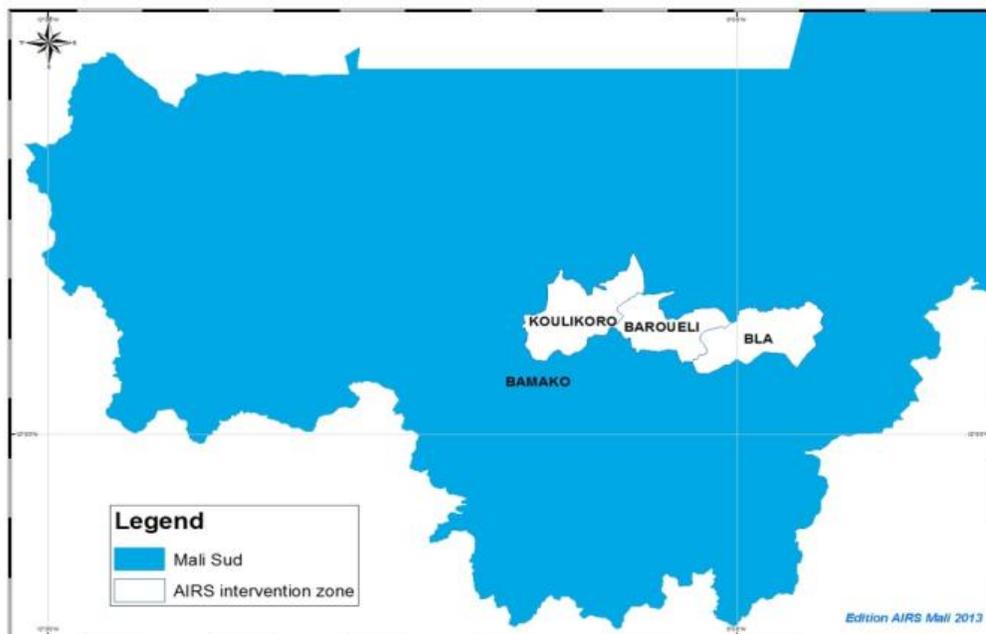
Nombre de personnes formées avec les fonds du Gouvernement Américain ² pour faire la PID	911
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² Based on the PMI indicator definition. It includes only spray personnel such as spray operators, team leaders, supervisors, and clinicians. It excludes data clerks, Information, Education and Communication (IEC) mobilizers, drivers, washers, porters, pump technicians, and security guards.

I. COUNTRY BACKGROUND

PMI has supported 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. Because of the short residual life of carbamates (bendiocarb) in some areas, particularly southern Baroueli district, PMI and the National Malaria Control Program (NMCP) agreed to push up the start of the IRS campaign to July 15 in Bla and Baraoueli using organophosphates, and started spraying in Koulikoro district on August 11th using carbamates to ensure that the sprayed walls would retain their efficacy through the peak malaria transmission season during September and October. The start of the 2014 IRS campaign coincided with the start of the rainy season though, which presented some challenges in transportation and spraying.

FIGURE 1: LOCATION OF IRS CAMPAIGN DISTRICTS: BAROUELI, BLA, AND KOULIKORO



I.1 2014 IRS CAMPAIGN OBJECTIVES

As stated in the 2014 AIRS Mali Work Plan, the four objectives in 2014 were:

1. Cover at least 85 percent of targeted and eligible structures found in all three districts (Baroueli, Bla, and Koulikoro).

2. Promote participatory implementation (at all levels) of the IRS operations in the three districts.
3. Continue efforts to develop the national and local capacity in organizing, planning, implementing, and evaluating IRS campaigns.
4. Participate in the development of a national IRS strategy document and provide further support towards:
 - The creation of a national-level IRS training manual, and
 - Support workshops and various training activities to disseminate the national IRS strategy.
5. Complete quality entomological monitoring for the 2014 IRS campaign. This includes the collection of information on vector susceptibility and the residual life of carbamates, to ensure the NMCP and PMI have sufficient information to select which insecticide will be used during the 2015 IRS campaign.

Overall, AIRS Mali targeted 233,789 structures in Baroueli, Bla, and Koulikoro; the number of structures found by SOPs during the 2014 IRS campaign to protect as many of the estimated 836, 551 people that live within these three districts.

2. PREPARATION FOR IRS CAMPAIGN

2.1 IRS CAMPAIGN PLANNING

Listed below are the activities that were undertaken to plan and organize the 2014 IRS campaign:

- Internal IRS Campaign Planning (January – July): Beginning in January, the AIRS Mali team began detailed planning for all activities to be completed within the IRS campaign. AIRS Mali staff met regularly between January and July to review the organization and planning for the IRS campaign. These meetings included revising training programs and materials, and setting standards for the IRS campaign. AIRS Mali conducted an inventory of IRS equipment and commodities left over from 2013, and then initiated procurements in-country and internationally for goods that were needed for the 2014 campaign.
- Meeting with IRS Steering Committee (March 2014): All activities were planned and implemented in collaboration with government technical partners (NMCP, National Directorate for Sanitation and Pollution Control (DNACPN), Ministry of Agriculture, and other government and non-government stakeholders) at the national, regional, district, and community levels.
- Meeting with Community Leaders in Koulikoro, Bla and Baroueli (March): Meetings with community leaders included discussions regarding the new dates for the IRS campaign (given that the NMCP and PMI wanted to start spraying in July, instead of August).
- Meetings with Community Health Association (ASACO), Health Center Technical Director (DTC) and district level (June and July): Rapid meetings were undertaken with ASACO members and DTCs throughout the spray districts in June and July to ensure that communities were aware of the new dates for implementation and establish the roles and commitments of the ASACO and DTC in implementing the IRS campaign.

2.2 INSECTICIDE SELECTION AND PROCUREMENT

Organophosphates and carbamates were selected as the insecticide classes for the 2014 IRS campaign based on entomological and insecticide resistance monitoring results. AIRS Mali calculated that 75,640 bottles of organophosphates would be needed (for Bla and Baraoueli) and 5,201 sachets (125 grams) of carbamates would be needed (for Koulikoro) to cover a total estimated 210,217 structures in the three spray districts. Since 16,126 sachets of carbamate were leftover from the previous spray campaign, an order was placed for 75,648 bottles of organophosphates and 5,260 sachets of carbamates (the slightly different numbers of insecticides ordered vs. needed are a result of packaging). The carbamates arrived in Mali in May and the South Africa

Bureau of Standards tested samples before they were shipped for quality control. The organophosphates were tested at CEMAS and all batches sent to Mali were found to be of good quality.

2.3 LOGISTICS PLANNING AND PROCUREMENT

2.3.1 INVENTORY ASSESSMENTS AND PROCUREMENT

AIRS Mali completed a full inventory in all three district warehouses. The following is a list of the types of items which were procured locally for the spray campaign.

- Coveralls
- Soap
- Spray Operator Cards
- IEC materials

The following is a list of the items procured internationally:

- Head lamps
- Batteries
- First Aid Kits
- Gloves
- Face shields
- Face shield brackets
- Respirator particulate

Please see Annexes 5, 6 and 7 for the full inventory lists.

2.3.2 LOGISTICAL NEEDS ASSESSMENTS

During its internal planning meetings, the AIRS Mali team planned the logistics and transportation for the 2014 IRS campaign. In June, the operations manager, logistics and procurement coordinator, technical manager, and ECO conducted geographic reconnaissance and visits to the operation sites and finalized the team’s plans for moving IRS commodities to each operation site. Starting July 5th, all IRS commodities were moved from Segou warehouse to the 50 operation sites of Bla and Baroueli districts. From the 09th to 10th August, all IRS commodities were moved from the Koulikoro district warehouse to the 16 operation sites. Three health centers (Massala, Kolebougou, Koulikoroba) have the same operation site.

Spray operations began in Bla and Baraoueli on July 15th and they began on August 11th in Koulikoro district. Two different types of insecticides were used, organophosphates (Actellic CS) were used in Bla and Baraoueli districts and carbamates were used in Koulikoro district.

Table 2 below denotes the distribution of selected IRS commodities to each operation site per district.

TABLE 2: DISTRIBUTION OF SELECTED IRS COMMODITIES TO OPERATION SITES

Operation Site	Number of Teams	Overalls	Boots/ Pair	Helmets /Complete	Spray Pumps	Gloves	Mask Respirators
Koulikoro	39	554	251	186	167	604	14070

Bla	66	908	454	363	327	656	16249
Baroueli	55	676	359	261	234	520	12741
Total	160	2,138	1,064	810	728	1,780	43,060

Table 3 below denotes the number and types of vehicles that were used during the spray campaign in each district.

TABLE 3: DISTRIBUTION OF VEHICLES

District	Mini Buses	Pick-Up/4x4	Motorbike Taxini
Koulikoro	16	3	3
Bla	27	3	3
Baroueli	22	3	3
Total	65	9	9

2.4 HUMAN RESOURCES

AIRS Mali hired 1,979 seasonal staff to implement the 2014 IRS campaign. This included 1,712 men and 267 women (13 %). Table 4 below provides a full breakdown of the number of men and women hired for each seasonal staff position.

TABLE 4: 2014 IRS CAMPAIGN SEASONAL STAFF BY POSITION

Position	Men	Women	Total
District coordinators	3	0	3
District logisticians	3	0	3
Data clerks	10	11	21
Pump mechanics	6	0	6
District warehouse managers	3	0	3
Finance assistants	2	1	3
IRS data transporters	9	0	9
Spray operators	571	11	582
Community supervisors	66	2	68
Team leaders	152	13	165
Storekeepers	58	10	68
IEC mobilizers	663	102	765
Washers	0	114	114
Entomological technicians	5	3	8
Security guards	68	0	68
Drivers	93	0	93
Total	1712	267	1979

Although priority was given to seasonal staff from previous IRS campaigns that performed well, AIRS Mali placed job advertisements for seasonal staff in Malian

newspapers in June to encourage others to apply. Spray operators, team leaders, pump mechanics, and washers were recruited in each spray area by the head of the ASACO and the DTC, based on criteria developed by the AIRS Mali technical staff. These criteria included: all spray operators were required to be able to read and write, SOPs needed to be able to carry spray pumps for several hours per day, and SOPs needed to have a certified note from a doctor stating that they are in good health. All SOPs are given a medical exam at the health post by the DTC and the process is closely supervised by AIRS. Women also needed to have a note from the doctor that stated that they were not pregnant.

2.5 TRAININGS

AIRS Mali held 14 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 poisoning from insecticide), and reinforced the value of the work in preventing malaria transmission.

All the trainings were implemented with the support and the involvement of government technical partners. The trainings took place between May 28 and July 14. In total, AIRS Mali trained 2,066 people, of whom 271 (13.12%) were women.

TABLE 5: TOTAL PEOPLE TRAINED BY POSITION

Categories of Persons Trained	Total		
	Male	Female	Total
Technical directors of community health center	38	2	40
District coordinators	3	0	3
Spray operators	571	11	582
Data clerks	11	10	21
Community supervisors	66	2	68
Team leaders	152	13	165
Washers	2	112	114
District logisticians	3	0	3
Storekeepers	58	10	68
Warehouse keepers	3	0	3
Medical staff involved in the treatment of Intoxication Cases	48	5	53
Mobilizers	663	102	765
Entomology technicians	5	3	8
Security guards	68	0	68
Drivers	93	0	93
Radio hosts	11	1	12
TOTAL M/F	1795	271	2066
TOTAL	2066		

The following is a brief description of the type of trainings, their duration and when they took place.

TABLE 6: DESCRIPTION OF TRAININGS

Type of Training	From	To	No. of Trainings	Brief Description
IEC ToT	June 16	June 18	3 (one per district)	The trainings covered key messages for the IEC mobilizers to communicate before, during and after the IRS campaign to prepare households for the IRS campaign, provide information on malaria prevention, and answer questions. The DTCs participated in many of these trainings, and were available to speak about the malaria outreach programming that the health centers provide.
IEC Mobilizers	June 21	July 4	68 (one two-day training at each site)	The training covered: <ul style="list-style-type: none"> • General information about malaria transmission, treatment and prevention • Schedule and details of IRS campaign activities • Best practices and strategies for informing household members about the IRS campaign
ToT for Spray Campaign Operations	June 19	July 21	1	This was a refresher course since most of the district coordinators and DTCs had previous IRS experience.
Spray Operators	July 30	July 11	28 (six training sites in each district)	The training covered spray techniques and rinsing of spray pumps, scheduling and the methods for completing the 2014 IRS campaign with Malian government staff, and the correct ways for working with households, before, during, and after spraying. 815 people participated in the training; many of them had worked on past IRS campaigns. A post-test was provided at the end of the training, with the people that scored highest on the test becoming IRS campaign supervisors, and team leaders. All participants received spray operations training, but only 582 participants became spray operators; the other 233 participants were selected for other positions within the spray campaign.

Type of Training	From	To	No. of Trainings	Brief Description
Orientation of Supervisors and Team Leaders	July 12	July 13	3 (one per district)	The session was led by the AIRS Mali team focused on supervision tasks, strategies, and the responsibilities and tasks of the storekeepers
Logistics	July 12	July 12	1	Secondary warehouse managers were trained on how to manage the stocks of materials and equipment at their disposal.
Washers	July 12	July 12	3	Washers were trained on best practices of washing and rinsing.
Store Security Guards	July 13	July 13	3	Guards were trained on their roles and responsibilities in monitoring stores.
Radio Hosts	June 20	June 20	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 11	July 11	1	Teams composed of 3 local coordinators, 2 district supervisors, 3 logistics managers and 3 central warehouses managers were oriented on their mission, tasks and responsibilities.
Data Clerks	July 12	July 13	1	Data clerks gained familiarity with the IRS campaign data entry forms and the database used for uploading all IRS campaign data. Data clerks also practiced entering data.
Security Transportation Drivers	July 13	July 13	3	Drivers were 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.
Medical Staff who Manage Insecticide Intoxication Cases	July 5	July 5	3 (one per district)	The training went over the correct protocol and methods to be followed to treat spray operators should any be injured or fall sick from the IRS campaign. In turn, the DTCs were asked to present this information to the district health staff.
Entomology Technicians	July 15	July 15	1	Entomological technicians were trained in mosquito field collection practices, insectary maintenance,

Type of Training	From	To	No. of Trainings	Brief Description
				identifying mosquito breeding sites, larval and pupae collection, identification of Anopheles larvae from Culicidene, and managing human landing catches.

Annex 3 provides a breakdown of the number of people trained before the 2014 IRS campaign.

3. COMMUNICATIONS

The AIRS Mali staff developed the communication activities for 2014 based on the cumulative lessons learned and experiences gained by the IRS team from the 2011 – 2013 spray rounds. Two months before the start of IRS campaign, AIRS Mali began working with staff at the national and district level, ASACO members, and the DTC to make initial contacts with community leaders (traditional village chiefs, religious leaders, and other community organizations and associations, especially women’s associations) to brief people that the 2014 IRS campaign would start in July. Community meetings were arranged between AIRS Mali staff and community leaders to begin the IRS campaign sensitization process, and to ask community leaders to begin discussing with community members how to prepare their structures for the IRS campaign.

AIRS Mali completed numerous communication activities in 2014:

Newspaper Articles: Two articles were published in L’ESSOR newspapers during the first week of the IRS campaign which provided the schedule for the IRS program, and the benefits of IRS. Follow-up articles were published that listed the results of the IRS campaign and interviews with beneficiaries about the benefits of accepting IRS. All messages noted that the funding for the IRS program came from USAID and PMI.

Door-to-Door Mobilization: In 2014, door-to-door mobilization was done by 765 mobilizers during 10 days just before IRS campaign. This was different from 2013 IRS campaign when the duration was 30 days with 1172 mobilizers. In order to save money, AIRS Mali dropped door-to-door mobilization and replaced it with mass mobilization and we assigned one community mobilizer per village. Each mobilizer worked with the town crier to sensitize the population to prepare them for the spray campaign. They also followed the spray team as they were spraying to provide more information to households just before and after spraying was completed.

IEC mobilizers visited communities throughout the spray districts to discuss the following with residents:

- IRS’ impact on reducing malaria
- How to prepare a structure for the spray campaign
- To wait two hours after spraying to re-enter the structure
- To not allow animals near the structure during and after spraying
- To sweep up and dispose of any insects that were killed by spraying
- The importance of continuing to use mosquito nets
- When to expect the spray operator in their area

Additionally, IEC mobilizers informed all beneficiaries to wait until January 2014 before applying any paint, plaster, etc. to the walls that were sprayed in their structure. One day before the start of spraying in a village, IEC mobilizers revisited the communities,

notified people of the spray campaign schedule, and reminded them to properly prepare their structures for the sprayers.

AIRS Mali noted that mobilizers reached fewer residents than in previous years, and cited the following reasons:

- In June when the rains begin, many adults work in their fields most of the day and they were absent from their communities to receive the door-to-door mobilization. In some cases, when the head of household was out in the fields, family members refused IEC mobilizers. In these communities, it is traditionally unacceptable to let a stranger into their household unless the head of the household is present, or the stranger is accompanied by the village chief.
- Door-to-door mobilization coincided with the rainy season and in some areas roads became difficult or impassable and often delayed the ability of IEC mobilizers to reach all communities.

Due to the low coverage rate, IEC door-to-door mobilization was extended in some areas for the first few weeks of the IRS campaign to ensure more people received IRS messaging.

Radio Broadcasts: Since radios are widely used and listened to throughout the spray districts, AIRS Mali made sure to use radio broadcasts to ensure wide dissemination of IRS spray campaign information. AIRS Mali worked with several local radio stations to broadcast a variety of programs in French and Bambara to further promote IRS campaign messaging. Radio announcers visited spray communities and conducted interviews with spray operators, washers, team leaders, and district coordinators about how their work was progressing. Radio announcers also interviewed DTCs, ASACO members, AIRS Mali staff, and village chiefs to discuss what they had observed during the IRS campaign.

Radio stations also produced small concerts in various communities, where griots and other musicians played songs about malaria and IRS. The concerts were played live over the air. Additionally, the radio station staff worked with AIRS Mali to include messaging about the 2014 IRS campaign. The audiences at the concerts were quizzed about the IRS campaign and people who answered questions correctly received an IRS campaign t-shirt or cap. In total, all community radios broadcasted 5,035 radio programs and organized 22 interactive shows. Approximately 850,000 people reside in these areas and could have been reached with the radio broadcasts.

mHealth Mobilization Pilot: In 2014, AIRS Mali conducted a mHealth mobilization pilot which targeted 3,275 beneficiaries. AIRS Mali focused on sending messages to beneficiaries before, during and after the spray campaign. SMS and voice messages were sent to cell phone subscribers in the pilot area, Tienfala in Koulikoro district, to provide information about the 2014 spray campaign schedule, encourage people to prepare their structures (remove furniture and wall hangings), and note post-spray activities (such as waiting to enter the structure for two hours after spraying). The intention was to note whether mobile messaging is effective in communicating with IRS beneficiaries and preparing them for an IRS campaign. AIRS Mali is currently analyzing the pilot data and a report will be generated and submitted. If successful, in future years, this means of communication can be adopted instead of completing door-to-door and/or mass mobilization.

4. IMPLEMENTATION OF IRS ACTIVITIES

The 2014 IRS campaign lasted for almost seven weeks, ending on August 25 in Bla and Baraoueli and September 19, 2014 in Koulikoro. A total of 160 spray teams were deployed during the campaign. 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.

Table 7 below notes the distribution of spray teams per district.

TABLE 7: DISTRIBUTION OF SPRAY TEAMS BY DISTRICT

District	No. of Spray Teams	No. of Eligible Structures
Bla	66	97,989
Baroueli	55	73,226
Koulikoro	39	62,989
TOTAL	160	233,706

Spray teams were kept as small as possible to ensure proper supervision. Spray teams consisted of four or five spray operators and one team leader. Additionally, field supervisors were deployed to monitor four spray teams each. The supervisors, in turn, were supervised by the district coordinator and informally by the DTC. The DTC's role was to provide supervision to the campaign when SOPs set off in the morning and when they returned in the afternoon. They also supervised spraying in some villages and made sure that the spray forms were properly filled out. New supervision forms were introduced to monitor the quality of data collection.

During the spray campaign all operation sites were staffed by storeroom keepers, guards, washers, and supervisors to monitor the work of the spray teams and the movement of vehicles to and from spray sites. Spray operations began at 6:00 am with the spray personnel meeting at their designated operation site to pick up their PPE, pumps and insecticide for the day. Once spray equipment and materials were distributed, the supervisor met with the spray team leaders, shared the spray schedule for that day, and the route to take to reach each community.

The spray teams departed for the communities at 6 am to carry out spraying and returned to the operation site around noon or 1 pm. Once they returned to the soak pit, spray operators lined up for spray pump progressive rinsing and then removed their coveralls and PPE for washing. Spray operators returned all insecticide sachets (either empty or unused) to the secondary storekeeper. The storekeeper placed empty sachets in a tightly closed drum within the storeroom to await transport for solid waste disposal after the IRS campaign, and also to provide a collection point to count/verify empty sachets against the number of sachets used. The unused sachets were returned to the available stock-on-hand and were distributed the following day.

IRS district teams, in close collaboration with the DTC, 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.

Since a more expensive insecticide (Actellic CS) was used during the 2014 spray campaign, the AIRS Mali team found several ways to reduce costs. These specifically included:

- Since door to door mobilization is very intensive and expensive, the team cut out this activity and instead, replaced it with mass communication and a mobilizer who was imbedded in each spray team. This allowed the team to still provide adequate messaging but reduced the cost.
- Mobile soak pits were piloted in nine health sites to reduce logistics costs.

Overall, the 2014 IRS campaign did not experience any insecticide poisonings or spills, and no injuries were reported. AIRS Mali found that communities were very receptive to having their structures sprayed. There was one minor vehicle accident; please see Annex 10 for more detail.

4.1 STOCK MANAGEMENT DURING THE IRS CAMPAIGN

AIRS Mali recruited three district logisticians for the IRS campaign to serve as a link between the operation site storekeepers and the district warehouse managers. The district logistician worked to coordinate supply chains to move needed IRS materials to the appropriate operation 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 operation sites.

AIRS Mali used inventory control cards (ICC) for recording each item in the three districts warehouses (Baroueli, Bla, and Koulikoro) and operation sites. Storekeepers updated the ICC daily regarding the movement of stock in or out of the storeroom. Storekeepers were also required to conduct routine physical stock counts daily to ensure that the actual stock in storerooms matched the ICC record.

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, all PPE was turned over to the washers for cleaning. After the PPE was washed, the washers turned the PPE over to the storekeepers and team leaders, who completed another inventory count to ensure that all inventory was returned.

At each operation site, storekeepers handed over to the team leaders the number of sachets of carbamate or bottles of organophosphate that each spray operator would use for spraying that day. The team leaders signed a special card to acknowledge receipt of the sachets of carbamate or the bottles of organophosphate. The special cards also noted the codes of the sachets received, for further tracking if needed. The

team leader also noted on another card the number of sachets provided to each spray operator and the codes for the sachets issued to each spray operator.

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

Additionally, the storekeepers prepared a comprehensive weekly stock report and submitted it to the district logisticians and the AIRS Mali logistics and procurement 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.

A mid-campaign inventory was completed by the district logistician for each operation site in their district and the balance of the inventory counted was reconciled with the inventory balances at each district warehouse. Additionally, the AIRS Mali logistics and procurement coordinator reviewed the inventory balances and used the mid-campaign inventory as the basis for sending needed IRS commodities to each operation site during the second half of the IRS campaign.

TABLE 8: INSECTICIDE USAGE DURING THE 2014 IRS CAMPAIGN

Carbamates	Balance
Carbamate balance before the spray campaign began	22,026
Carbamates procured for the 2014 campaign	5,260
Total number of insecticide sachets available for 2014 campaign	27,286
Carbamate sachets used during the 2014 IRS campaign	24,250
Balance after the completion of the campaign	3,036

Organophosphates	Balance
Organophosphate balance before the spray campaign began	0
Organophosphates procured for the 2014 campaign	75,648
Total number of insecticide bottles available for 2014 campaign	75,648
Organophosphate bottles used during the 2014 IRS campaign*	65,697
Balance after the completion of the campaign	9,948

*Please note that 3 bottles of organophosphates were reported as missing/stolen in Baroueli district /Niazana health area. The AIRS Mali team reported this incident to the police.

4.2 INNOVATIONS AND SPRAY CAMPAIGN IMPROVEMENTS

AIRS Mali implemented several innovations and pilots during the 2014 spray campaign. These included:

- Mobile Soak Pit Pilot: This strategy was a considered a success by the project because it achieved the following successes:

- It reduced logistics cost (fuel, rental costs).
- It reduced the spray operators' travel time to and from the operational site.
- Since the SOPs camped in the villages, they had more time to sensitize the community about the benefits of IRS.

More information on this pilot can be found under the Environmental Compliance section.

Use of Taxinis: Taxinis (motorbikes with connected carts) were used in the areas where AIRS Mali implemented mobile soak pits to replace vehicles. One taxini was used for each pilot site (for a total of nine). The taxinis helped to reduce both fuel and rental costs. This means of transportation also facilitates access to areas otherwise inaccessible by larger vehicles. The size of the taxinis was deemed to be a bit too small though so the AIRS Mali team would like to rent larger taxinis next spray campaign.

- Spending the Night in the Village: In certain remote areas, the spray teams camped in the villages they sprayed, which allowed them to start spray operations early in the morning. It had the added benefits of giving them the opportunity to raise the awareness of the beneficiary population.

5. MONITORING AND EVALUATION

Monitoring and evaluation for the 2014 IRS campaign closely followed the processes outlined in the 2014 AIRS Mali Work Plan and the M&E Concept Paper developed by the AIRS core team. M&E activities, under the supervision of the Chief of Party, were led by the AIRS Mali M&E manager and the database manager. A the previously used secure and reliable Access database was updated by the database manager to reflect minor changes to the 2014 AIRS M&E system, and deployed to the data entry centers in Bamako and Ségou. 14 data clerks worked in the data center in Ségou, which received data from Baroueli and Bla districts, while seven data clerks worked in the Bamako data center and entered data from Koulikoro district.

5.1 KEY OBJECTIVES

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

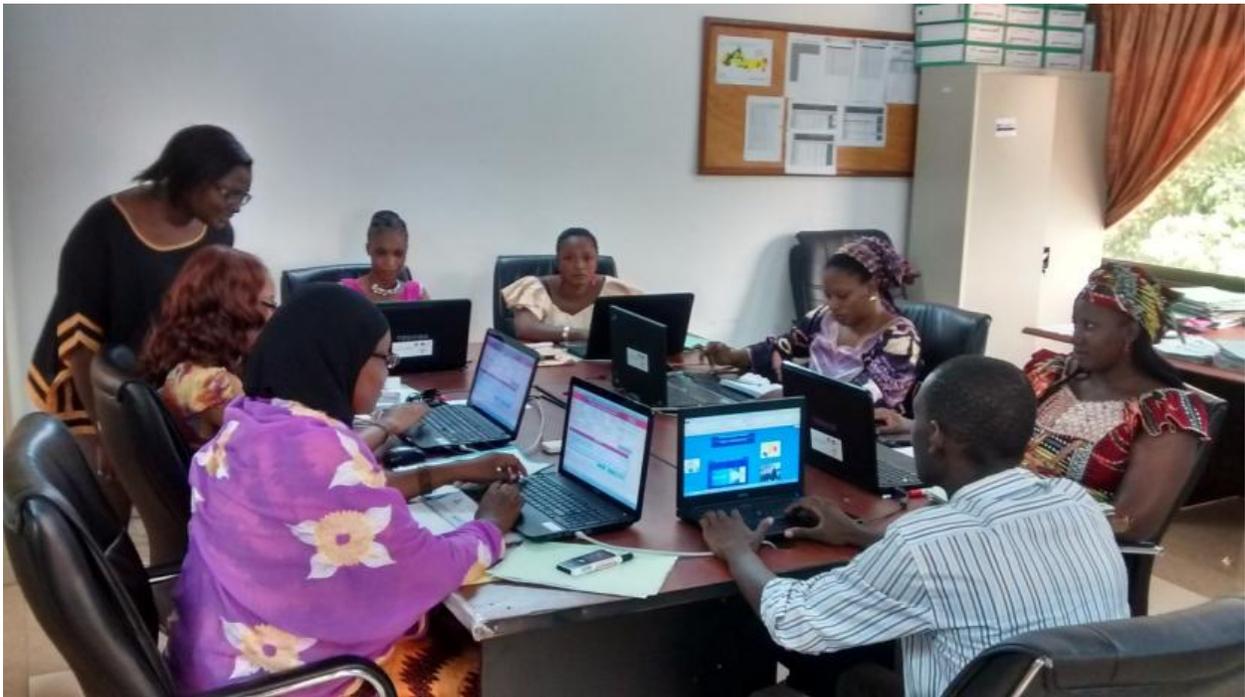
- To emphasize accuracy of both the data collection and data entry processes through comprehensive training and supervision at all levels
- To streamline and standardize data flow, minimize error, and facilitate timely reporting
- To ensure IRS data security and storage for future reference through the establishment and enforcement of proper protocols
- 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 tools to accommodate the updates to the AIRS M&E system for the 2014 spray campaigns, such as installing a cleaner on the DEC's computers. As noted above, all updates were incorporated into the Access database to ensure accuracy and consistency of data entry and reporting.

Data clerks entered spray data into the database and transmitted results to the AIRS Mali office in Bamako within 24 to 48 hours of spray for quality control purposes and the timely generation of weekly client reports that tracked the progress of the 2014 IRS campaign. Once entered, paper forms were filed and temporarily archived at the data centers. Eventually, all data collection forms were transferred to the AIRS Mali office in Bamako for long-term storage. A daily electronic back-up of data was saved to the AIRS Mali server and to an external hard drive for data safety.

FIGURE 2: DATA CLERKS ENTERING SPRAY CAMPAIGN DATA AT THE BAMAKO DATA CENTER



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 (i.e. spray operators, team leaders, district coordinators, M&E manager, database manager, etc.) Specific activities conducted to ensure data quality included:

Physical Data Verification:

- Spray Operator Level: 100% of spray data collected on spray operator forms were reviewed, arithmetically verified, and signed off by the team leader and the supervisor.
- District Level: District coordinators received the paper forms from the supervisors and checked the accuracy of the spray data. Afterward, the spray operator forms were transmitted to the data centers by motorbike messengers (one from each district) each evening.
- Data Entry Level: Data clerks reviewed each form for typos and transcription errors and verified the arithmetic calculations on the spray forms were correct before entering the data into the database.

USAID/Mali health office's Monitoring and Evaluation officer also conducted DQA on IRS to ensure quality data are collected and reported.

M&E Data Quality Assurance Tools

Table 9 shows the percentage of structures verified by AIRS Mali using each of the data quality assurance tools.

TABLE 9: NUMBER OF SUPERVISORY TOOLS USED

M&E supervisory tools	Structures Verified	Structures corrected	Percent Verified	Target Percentage
Error Eliminator (Support 17)	1471	265	82%	42.8%
Data Collection Verification (Support 15)	1286	195	85%	16%
Data Entry Verification (Support 16)	1,764 lines and 736 Totals lines)	363	79%	100%

AIRS Mali had already developed a large number of supervisory tools which have been in place in previous campaigns. Initial use of the data quality assurance tools was lower than expected because of the numerous tools supervisors were responsible for and the lack of field testing of the Data Quality Assurance tools before the start of the campaign. Based on the 2014 experience, AIRS Mali will streamline their entire set of supervisory tools and change the language of the Data Quality Assurance forms into Bambara to increase use.

5.4 SPRAY COVERAGE RESULTS

The 2014 AIRS Mali campaign sprayed 228,123 structures of the 233,706 structures found, for spray coverage of 97.61%

TABLE 10: SPRAY COVERAGE AND POPULATION PROTECTED

District	Eligible Structures Found	Structures Sprayed	Spray Coverage	Population Protected (total)	Children <5 Years Protected	Pregnant Women Protected
Koulikoro	62,491	61,234	97.99%	223,012	38,740	6,106
Baroueli	73,226	70,660	96.50%	279,441	48,891	7,265
Bla	97,989	96,229	98.20%	334,115	67,133	8981
Total	233,706	228,123	97.61%	836,568	154,764	22,352

5.5 POPULATION PROTECTED

In total, 836,568 people were protected by AIRS Mali during the 2014 spray campaign, including 22,352 pregnant women and 154,764 children under five-years old.

TABLE 11: POPULATION PROTECTED, DISAGGREGATED BY SEX, AND DISTRICT

District	Total Population Protected		
	Male	Female	Total
Koulikoro	117,589	105,423	223,012
Baroueli	141,202	138,239	279,441
Bla	163,511	170,604	334,115
Total	422,302	414,266	836,568

5.6 INSECTICIDE USE AND SPRAY OPERATOR PERFORMANCE

In total, 89,947 sachets/bottles of insecticides were used to spray 228,123 structures. On average, 2.7 structures were sprayed per sachet/bottle of insecticide.

The performance tracker allowed AIRS Mali to follow the campaign's progress. At the end of each day, the districts coordinators, using mobile phones, called the supervisors of all sites to collect data on the number of structures sprayed and the quantity of insecticide used.

The district coordinators then sent the collected data to the operations manager, who aggregated the data daily. This approach allowed AIRS Mali to understand the campaign's progress and make decisions.

5.7 POST-SPRAY DATA QUALITY AUDIT

In order to confirm the accuracy of the data collected during the 2014 spray round, AIRS Mali conducted an audit exercise to verify the number of eligible and/or sprayed structures within a sample of 500 structures in the health districts of Bla, Baroueli, and Koulikoro.

The objectives of the PSDQA were as follows:

- Validate spray coverage reported by Abt Associates for the 2014 spray round.
- Validate proportion of people protected reported by Abt Associates for the 2014 spray round.
- Identify and incorporate best practices and lessons learned for data collection, entry, and management for the remainder of the AIRS project.

The AIRS Mali team just finished collecting the data and is currently analyzing the results. The full PSDQA report will be submitted as a separate document to PMI.

6. ENVIRONMENTAL COMPLIANCE

6.1 GEOGRAPHIC RECONNAISSANCE

A very brief geographic reconnaissance was completed by AIRS Mali's Environmental Compliance Officer (ECO) in March followed immediately by the pre-spray environmental assessment. The activity identified areas with difficult geography (see Annex 1), given the start of the rainy season in June that would need additional planning for the transport of IRS commodities, spray operators, seasonal staff, and spray campaign data to data entry sites. Overall, the geographical reconnaissance provided the AIRS Mali team with local knowledge of the terrain covered by the IRS campaign.

6.2 MOBILE SOAK PIT IMPLEMENTATION

AIRS Mali chose 9 sites to test mobile soak pits in the three districts (three sites per district). Site selection was made mainly based on the number of operators (not more than 5) and accessibility of villages by taxinis (motorcycle taxi). One of the reported successes for the pilot was that 8 of the 9 sites achieved their spray coverage before their scheduled time for the IRS campaign. Spray teams liked using the mobile soak pits because it reduced their transportation time to the sites. They felt that they could use this extra time to interact with beneficiaries to make them understand the benefits of spraying and the importance of the community adherence.

The following are the benefits of using mobile soak pits:

- Spray teams spend less time traveling to and from the operational sites so they can start spraying earlier in the day and finish before the excessive heat starts
- It's easy to train spray teams to use mobile soak pits
- High acceptance of the soak pits by spray operators
- Better access to remote areas for spraying

Even though AIRS Mali formed an agreement with village chiefs to provide water for the spray operations, this didn't happen in all villages. As a result, the local population agreed to provide the spray teams with water.

6.3 PRE-SEASON ENVIRONMENTAL COMPLIANCE ASSESSMENTS (PSECA)

In accordance with the 2014 action plan, the Pre-Season Environmental Compliance Assessment (PSECA) took place from March 2-18 in the 68 sites in three districts. This activity was carried out by the inspection team led by the AIRS Mali ECO and included a representative of the Ministry of Environment and a representative of the National Malaria Control Program (NMCP). The objectives of these assessments were:

- Review the location and physical condition of soak pits and insecticide storerooms;
- Check the availability of sufficient quantities of Personal Protective Equipment (PPE) and

hygiene items;

- Identify problems related to the storage of insecticides and equipment;
- Check the availability of an antidote at the district health center (CSRéf);
- Write a report containing the recommendations and a plan to rectify any problems identified during the inspection.

A smartphone was used to collect the PSECA information for each site and the data was then sent to Abt Associates' home office server. The server then sends the information on identified problems and issues automatically to the COP, Technical Director, Operations Manager, and the ECO. Based on the assessment findings, a work list was developed and executed. The following repairs were conducted before the beginning of the 2014 campaign:

District	Number of sites	Number of repaired sites	Notes
Bla	27	27	Major repairs at stores at Tiénabougou, Pénéso and Diédala Refurbishment of all soak pits and wash area Fixing security fencing of soak pits Replacing defective padlocks at store and soak pits fences
Baroueli	23	23	Construction of a new soak pit for Sanando and support for the construction of secondary stores at Mpèbougou and Wondobougou Refurbishment of all other soak pits and wash areas Fixing security fencing Padlocks changed at stores and soak pits fences
Koulikoro	18	18	Construction of new soak pit and wash area at Kamani and support for storeroom construction in Tamani Refurbishment of soak pits and wash areas Fixing security fencing Repair of storeroom roof at Chola Padlocks changed at stores and soak pits fences

FIGURE 3: REBURBISHMENT OF OPERATION SITE IN KOULIKORO DISTRICT



Annex 2 notes the location of each operation site (where the soak pits, wash areas, and storeroom were located) for the 2014 IRS campaign, and if the operation site received refurbishments to its storeroom, soak pit, or fencing.

6.4 MEDICAL CLEARANCES

Before the final choice of IRS actors who will be in contact with the insecticide or contaminated PPE, medical consultations were held at each health area. Thus the DTC from each Health area conducted clinical examinations of applicants for positions of operators, team leaders, supervisors and storekeepers. This is to assess their ability to do their various tasks. In addition to the examination of general aptitude for all the above mentioned actors, pregnancy tests and counseling was conducted for each female applicant. Since pregnant and lactating women should not come in to contact with insecticides, they are not selected for those positions. In the future, they will be accommodated and assigned to positions in which they do not come in to contact with insecticides.

6.5 MANAGEMENT OF INSECTICIDE ADVERSE EFFECTS

For the management of potential poisoning events, the following actions were taken:

- Training of all Health Center Technical Director (DTC) on the management and the treatment of cases of pesticide poisoning: practitioners of the 68 health areas of intervention and their District level counterparts (CSRéfs practitioners) were trained. A total of 74 practitioners at district and community levels were trained on pesticides poisoning case treatment.
- The availability of antidotes: during the PSECA, the availability of an antidote was checked at the CSRéf of the three districts covered by the project. It was found that the stock of atropine provided by AIRS in 2013 was still in good condition in all of the Community Health Centers (CSCOM).

- First aid kit: all storerooms and vehicles used during the campaign were stocked with a first aid kit for treatment of minor cases of poisoning.

Additionally, all spray operators (582), team leaders (164), supervisors (68) and storekeepers (68), have been trained on pesticide poisoning signs, how to use the first aid kit, and actions to be taken when faced with a pesticide poisoning case. In addition, 59 drivers and 114 washers were trained on the pesticide security procedures and the use of PPE when washing overalls, respectively.

6.6 MID-SEASON ENVIRONMENTAL INSPECTION

Due to the use of organophosphates for the first time by AIRS Mali in Bla and Baroueli districts, the mid-season environmental inspections were completed with extra attention. A team of four inspectors (ECO, two representatives from the environment ministry and one representative of the NMCP) were trained and assisted with inspections throughout the 2014 campaign. This inspection team was supported by the STTA of Albert Acquaye, Environmental Manager from Abt Associates' home office, who visited Mali from July 8- 22, 2014 to provide technical support for the environmental inspections, most notably at the pilot sites for mobile soak pits. Representatives of the environmental services at the regional and district levels were also part of the environmental inspections. During the campaign, two teams visited operational sites to ensure the correct use of PPE, proper working and use of wash facilities, compliance with restriction measures (such as no eating and or drinking while in PPE) during the IRS operations, etc.

The recurrent problem identified during these inspections was mainly due to the improper securing of poultry during spray operations. This problem arises because many households do not have cages for the birds, as recommended. See Annex 10 for more information about the results of the inspections.

It is important to note that each inspection team had a smartphone so they could fill in the forms electronically and send them to the server in Bethesda. The server then sent the information to the COP, Operation Manager and ECO for corrective measures to be taken.

No adverse incidents or accidents were reported during spray operations. Also there were no vehicular or motorbike accidents reported. However, the loss of three bottles of insecticides was noted in Niazana health area (Baroueli district). Investigations conducted by the AIRS Mali team have not been successful in identifying the culprits. The information was provided to the Baroueli police.

6.7 POST-SEASON ENVIRONMENTAL ASSESSMENT

From September 21 – 29, 2014 the inspection team visited all 68 operating sites to ensure that all of the contaminated waste (including, empty insecticide sachets and bottles, and unusable PPE and plastic sheets) had been transported to the central warehouses, verify the effective cleaning of secondary stores and washing areas, confirm that soak pits fences had been secured with padlocks, and complete the checklist for the post-IRS

environmental compliance assessment using a smartphone for each site.

Findings during the inspections indicated the following:

- At all stores, the remaining insecticides, equipment and waste from the campaign were sent to central warehouses;
- The soak pits were covered with slabs and fences and storerooms doors locked;
- The danger signs are visible on storerooms and soak pits' fences;

The problems encountered during the post campaign environment assessment were the presence of grass on the area surrounding some soak pits and some deficiencies in the washing process of a few storerooms. For these deficiencies, early intervention was recommended and implemented with the help of Health Centers Technical Directors of before the end of the inspection. See Annex 11 for the results of the post-season inspection.

6.7.1 IRS WASTE DISPOSAL

At the end of 2014 campaign, all of the solid waste from the operational sites was collected and transported to the central warehouses at Segou and Koulikoro, where each warehouse has one 20-foot waste container. The process of washing all plastic waste and overalls and other PPE is currently ongoing. At the end of these operations, the waste will be transported to Noumoubougou for final disposal. Depending on the type of waste, they will either be incinerated, landfilled, or given to recycle partners. The following table presents details of each waste stream's disposal.

Type of Waste	Number	Disposal Method	Disposal site	Period	Notes
Pesticide Bottles	65,697	Recycling or disposal in a Bury Technical Center after grinding them	Partner recycling entities or Sikasso Bury Technical Center (Centre d'Enfouissement Technique)	November 2014	AIRS was able to locate a suitable recycling company and the bottles are currently being recycled.
Pesticide Sachets	24,250	Incineration	Noumoubougou incinerator	November 2014	Incinerate by trained operators and supervised by AIRS Mali ECO, Logistician and representative of DNACPN (Ministry of Environment)
Masks	34,680				
Contaminated paper					
Empty Plastic		Recycling	Bamako-Sotuba SICMA PLAST	November 2014	AIRS Mali used a factory that recycled the 2012 and 2013 plastic sheets, gloves and plastic packaging. The same factory will recycle them
Boots (pair)	33				
Gloves (pair)	1799				
Plastic sheets	57				

Type of Waste	Number	Disposal Method	Disposal site	Period	Notes
Plastic packaging	3,032				again.
Operators bags	942	Landfill	Tiefala-municipal landfill	November 2014	
Towels	724	Landfill	Tiefala-municipal landfill	November 2014	
Coveralls	1439	Landfill	Tiefala-municipal landfill	November 2014	
Helmet	498	Landfill	Tiefala-municipal landfill	November 2014	
Face shield	97	Landfill	Tiefala-municipal landfill	November 2014	
Incineration dust	TBD	Landfill	Sikasso Bury Technical Center (Centre d'Enfouissement Technique)	November	This Center has been used since IRS started in Mali and it is a unique center in the country. It consists of underground concrete constructed "cells".

6.8 MOBILE INCINERATOR TESTING

The ECO and the Logistics and Procurement Manager visited the mobile incinerator in Noumoubougou (Koulikoro district) in May and September 2014 and carried out tests to ensure it had the ability to reach a high enough temperature to properly incinerate and dispose of solid wastes from the IRS campaign. The incinerator test was performed with the assistance of a mechanical engineer. The recommendations from these assessments of incinerator led to the following repairs in October 2014:

- The installation of a new control board;
- Installing a new burner; and
- Purchase of two (2) grids for the primary incineration chamber

After these repairs, the incinerator has been tested successfully and declared appropriate for the work.

AIRS Mali was authorized to use this incinerator as it was purchased and procured by PMI, and although it currently sits in a government facility, it has not been formally handed over to the government of Mali.

FIGURE 4: MOBILE INCINERATOR TESTING



7. ENTOMOLOGY

This entomology report provides a brief summary of entomological data collected pre-IRS campaign as baseline and one data point after IRS was completed. A comprehensive standalone entomological surveillance report will be submitted in December.

7.1 ENTOMOLOGICAL SURVEILLANCE BASELINE

Entomological monitoring is essential in any insecticide-based vector control intervention such as IRS. It helps to assess the quality of the vector control intervention as well as its efficacy. The entomological monitoring data is used to justify decisions such as the type of insecticide and selection of target areas. AIRS Mali implemented entomology activities which were aimed at:

- Assessing malaria vector species, density and parity composition in intervention and selected control areas;
- Establishing vector feeding time and location;
- Monitoring the quality of insecticide application and insecticide decay rates;
- Assessing vector susceptibility to insecticides approved for IRS and mechanism of resistance

Vector Species Composition, Density, Feeding Time and Location

AIRS Mali collected baseline data from four sentinel sites to assess vector species composition, density, parity and behavior using human landing collections (HLC) and pyrethrum spray catches (PSC). In August, data was collected in Koulikoro (spray district) and data was collected in July in Kati district (control site), both of which are located in Koulikoro region. Data was collected in July in Bla (spray district) and Segou district (control) in Segou region. *An. gambiae* s.l. was the most prevalent vector species collected from all the sites surveyed. Vector density was calculated as the average number of *An. gambiae* s.l. collected per house per day from PSC data. During baseline monitoring, the results indicated 11.2 and 4.3 *An. gambiae* s.l. per house per day for Koulikoro and Bla intervention districts, respectively. Data from the two control villages have shown 6.25 and 17.45 *An. gambiae* s.l. per house per day for Kati and Ségou districts, respectively.

Feeding location: Data on human blood seeking rate or human biting rate of *An. gambiae* s.l. was collected using HLCs before IRS. The human biting rate (MBR) before the spraying was 66 bites per person per night indoors and 49.5 bites per person per night outdoors in Koulikoro (IRS target area) and 158.5 bites per person per night indoors and 163.5 bites per person per night outdoors in Kati (the control site). The vector seemed to exhibit endophagic tendency in the intervention site as compared to the control village ($P < 0.05$) and (95% CI: 1.01-1.34). The same endophagic behavior was

observed in Segou region. The MBR was 7.5 per person per night indoors and 2.5 per person per night outdoors in Bla (IRS target area) ($P < 0.05$) and (95% CI: 1.5-6.1); The situation was different in Segou (the control site) where 30.5 mosquitoes per person per night indoors and 40 mosquitoes per person per night outdoors were collected at the baseline that indicated exophagic tendency ($P < 0.05$) and (95% CI: 1.03-1.65).

One month after spraying was completed, AIRS Mali collected entomological data from four sentinel sites in August and September respectively in Koulikoro and Kati districts in Koulikoro region and Bla and Segou districts in Segou region, to assess the impact of IRS on vector species composition, density, parity and behavior using human landing collections (HLC) and pyrethrum spray catches (PSC). *An. gambiae* s.l. was still the most prevalent vector species collected from all the sites surveyed. Vector density per house per day from PSC data was 1.75 and 11.9 *An. gambiae* s.l. per house per day for Koulikoro and Bla intervention districts, respectively. Data from the two control villages have shown 5.55 and 70.55 *An. gambiae* s.l. per house per day for Kati and Segou districts, respectively. Vector density per house per day was significantly higher in control sites as compared to IRS target sites ($P < 0.0001$).

Feeding location: one month after spraying data from HLCs indicated that the MBR was 25.5 and 52 bites per person per night of *An. gambiae* s.l. indoors and outdoors in Koulikoro (IRS target area), respectively. At the same time 148.5 bites per person per night indoors and 187 bites per person per night outdoors of *An. gambiae* s.l. were noted in Kati (the control site). The vector seemed to exhibit exophagic tendency in both intervention and control site ($P < 0.005$) and (95%CI: 0.6-0.9). The same behavior was observed in Segou region. In the data collected one month after IRS, *An. gambiae* s.l. MBR was 2 mosquito bites per person per night indoors and 8.5 mosquito bites per person per night outdoors in Bla (IRS target area); and 91.5 mosquito bites per person per night indoors and 99 mosquito bites per person per night outdoors in Segou (the control). The HBR was significantly higher both indoors and outdoors in the control villages as compared to the intervention villages ($P < 0.0001$).

7.2 QUALITY CONTROL TESTING AND RESIDUAL EFFICACY MONITORING

Bendiocarb (carbamate) was sprayed in Koulikoro district and pirimiphos methyl (organophosphate) was sprayed in Baraoueli and Bla district. At the beginning of the IRS campaign, a quality control assessment was carried out at four sentinel sites (Tienfala and Souban in Koulikoro District, Konobougou and Banido in Baroueli District, and Touna and Tia in Bla District). The assessment aimed to assess the quality and homogeneity of insecticide treatment. *Anopheles gambiae* strain KISUMU, which is susceptible to all insecticides, reared at the AIRS Mali insectary were used for this activity. Bioassays were performed 24 hours after IRS was done, following WHO procedures.

Cone bioassays were conducted in 18 sprayed structures in the three districts within 24 hours of spraying to assess the quality of spraying and one month after spraying to determine the insecticide decay rate. In each district 4 to 6 structures were sampled and used for the tests.

The result showed that the quality of spraying was good and homogeneous with 100% test mortality of the exposed mosquitoes.

One month (at time 1=T1) after spraying the test mortality rates was 95% in Koulikoro, (Figure 5) 99% Baroueli and 88% in Bla (Figure 6).

FIGURE 5: AN. GAMBIAE (KISUMU STRAIN) 24 HOUR MORTALITY AFTER 30 MINUTES EXPOSURE IN BENDIOCARB SPRAYED DISTRICTS

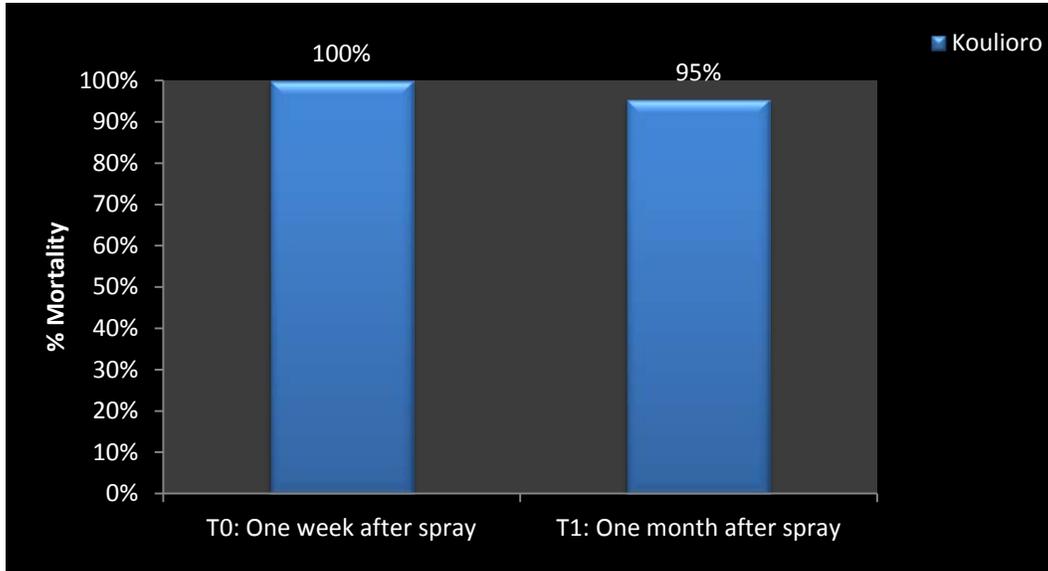
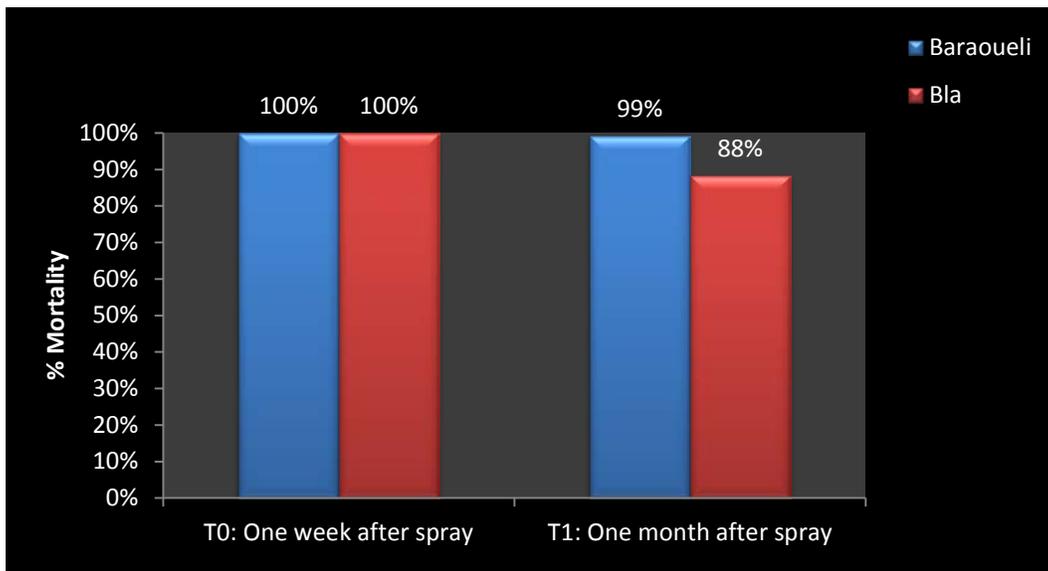


FIGURE 6: AN. GAMBIAE (KISUMU STRAIN) 24 HOUR MORTALITY AFTER 30 MINUTES EXPOSURE IN PIRIMIPHOS METHYL SPRAYED DISTRICTS



8. POST-SPRAY ACTIVITIES

The 2014 IRS campaign was completed on September 19, 2014. The following activities were implemented after the completion of the campaign:

8.1 POST-SPRAY MEETINGS

District Review Meetings: In October 2014, AIRS Mali staff organized a review meeting in each spray district. The meetings were attended by community leaders (including the DTC, ASACO leaders, village chiefs, representatives from community women's and youth associations, and local NGOs). Additionally, where possible seasonal IRS campaign staff, including spray operators, spray team leaders, district coordinators, and storekeepers, attended the meeting. The meetings provided an opportunity for communities to assess the 2014 spray campaign and provide recommendations for improving IRS programming for the 2015 IRS campaign.

Overall, the communities covered by the spray campaign were appreciative. However, many communities stated that future IRS campaigns should begin their organization with the communities much earlier, to reduce the density of mosquitoes that are already numerous before the startup of the campaign in August.

8.2 POST-SPRAY INVENTORY

Starting in September, all PPE and insecticide and consumables were returned to the district warehouses, where the AIRS Mali logistics and procurement coordinator and district warehouse managers completed an inventory of all remaining commodities from the 2014 IRS campaign. The results of the inventory are in Annexes 5, 6 & 7.

-The results show a significant quantity of broken or unusable items like coveralls, gloves, raincoats, tarpaulin, towels, operator bags, plastic buckets, face shields, face shield brackets, etc.

-Most of the items have been in use for several years.

-AIRS Mali is proposing to procure new items in 2015 from the US so that the quality is adequate.

-The motorbikes in Koulikoro and Bla have been used for seven years now and experienced significant wear and tear, and therefore need to be replaced.

-The Segou warehouse, which stores items for Bla and Baraoueli districts, is deemed to be of substandard construction and therefore needs to be replaced with a warehouse of acceptable quality.

8.3 POST-SPRAY CAMPAIGN RADIO PROGRAMS

Two weeks after the end of IRS campaign, 12 radio broadcasts in Baroueli, Bla, and Koulikoro districts consisted of short messages and programs that provided the following information:

- 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
- Noting that beneficiaries cannot apply paint or plaster to sprayed walls until January, to allow the carbamate to be effective against mosquitoes
- General information on malaria transmission, prevention, and treatment

9. CAPACITY BUILDING ACTIVITIES

As in previous campaigns, AIRS Mali involved the NMCP at all stages of implementation, including planning, training and supervision. AIRS Mali successfully implemented the four activities which were laid out as part of their 2014 capacity building plan. These four activities were:

1. A 3 day workshop was held on June 3-5 with NMCP staff (2), staff from the Ministry of Health (2), the Ministry of Environment (2), and DNACPN (2) to engage central level personnel in the different IRS components (IRS planning, environmental compliance, training, and implementation). The goal of the workshop was to help build a knowledge base among the central level personnel about IRS, share tools, and discuss options where they can play a more active role in implementation.
2. AIRS hired the District Coordinators and District Malaria Focal Points before the Training of Trainers in order to have them participate in the training. They were involved in the training process, personnel recruitment, and as a result, they were able to see the 'big picture' of how much work takes place from training to the start of the campaign. The AIRS staff (Operations & Environmental Compliance Manager) mentored the appointed District Coordinators and District Malaria Focal Points in training, planning, and engaging with their supervisor and spray operators.
3. AIRS hired a government official with IRS and Environmental Compliance experience to serve as Acting Technical Manager. The person identified for the campaign worked at the Ministry of Environment and has IRS experience. He worked with the AIRS team over the course of two months to learn how to manage an IRS campaign in one specific district and was exposed to the day-to-day operations.
4. New updated consolidated supervisory forms were rolled out during the ToT in 2014, and AIRS wanted the District Coordinators, District Malaria Focal Points, and Supervisors to play a more active role in ensuring the forms are filled out and are used for decision making throughout the campaign. Therefore, these selected people were engaged in the management and implementation of the supervisory tools. They reviewed the forms on a daily/weekly bases to monitor their use and trouble shoot any issues.

10. LESSONS LEARNED AND RECOMMENDATIONS

1. AIRS Mali created and piloted an electronic inventory management system to reduce counting errors and provide real time inventory information. This system was implemented successfully in 2014 in both warehouses.
2. Due to the high cost of renting numerous vehicles in Mali for the spray campaign, and the need to get PMI approval for the vehicle rentals (as the cost for vehicle rentals is over \$150,000), the procurement/bids and selection of vehicles to be rented for the IRS campaign must be made earlier.
3. Setting up payments for seasonal staff in the field via Ecobank has proven to be effective, and limits security risks related to AIRS Mali staff transporting large amounts of money to the field. However, the agreement with Ecobank must be signed earlier in the year, and a well-defined payment schedule needs to be developed and approved by AIRS core staff and Ecobank.
4. If IEC messaging was not received by a majority of the population (particularly due to absence, as populations are not at home, and are in their fields farming), it is best to continue door-to-door mobilization during the IRS campaign, in order to make sure households are sufficiently prepared for the IRS campaign.
5. Completing an incinerator inspection early in March 2014, help to avoid any repair before the IRS campaign.
6. AIRS Mali collaborated with local authorities and they spoke with households that did not want to initially accept IRS. This communication and education helped to reduce the number of refusal rates.

ANNEXES

ANNEX 1: HEALTH AREAS WHICH ARE DIFFICULT TO ACCESS

BLA DISTRICT	HAZARDOUS SITUATION	RISK RANKING	DIRECT IMPACT	PREVENTIVE /REMEDIAL ACTION
Bogoni	Mud on Road		Vehicle may be taken by the mud.	All vehicles must have required mud solution supports aboard.
Diena	Possibility of flood situation on main road access		Main road can be cut	Circumvent the impact. Possible traditional ferry crossing available on river. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.
Kazangasso	Mud on Road		Vehicle may be taken by the mud.	All vehicles must have required mud solution supports aboard.
Samabogo	Possibility of flood situation on main road access		Main road can be cut	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.
Tienabougou	Mud on Road		Vehicle may be taken by the mud.	All vehicles must have required mud solution supports aboard.
Diaramana	Possibility of flood situation on main road access		Main road can be cut	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.

KOULIKORO DISTRICT	HAZARDOUS SITUATION	RISK RANKING	DIRECT IMPACT	PREVENTIVE /REMEDIAL ACTION
Kamani	Possibility of flood situation on main road access. And mud on main road.		Main road can be cut.	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene. Availability of supports mud solutions required. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.
Koula	Possibility of flood situation on main road access And mud on main road.		Main road can be cut.	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene. Availability of supports mud solutions required. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.
Tombougou	Possibility of flood situation on main road access And mud on main road.		Vehicle may be taken by the mud.	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene. Availability of supports mud solutions required. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.
Tougouni	Possibility of flood situation on main road access		Main road can be cut.	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene.
Nyamina	Possibility of flood		Vehicle may be taken	All vehicles must have required mud solution

	situation on main road access.		by the mud.	supports aboard.
Sirakorobougou	Possibility of flood situation on main road access mud		Main road can be cut	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene. Availability of supports mud solutions required. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.
Tamani	Possibility of flood situation on main road access		Main road can be cut.	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene. Availability of supports mud solutions required. Max required consumables and insecticide to be dispatched to avoid any road cut consequences.
Sizani				
Tienfala				
Kenenkou	Flood river branch.			

BARAOUELI DISTRICT	HAZARDOUS SITUATION	RISK RANKING	DIRECT IMPACT	PREVENTIVE /REMEDIAL ACTION
Tesserela	Mud on Road		Vehicle may be taken by the mud.	All vehicles must have required mud solution supports aboard.
Moabougou	Possibility of flood situation on main road access		Main road can be cut	Circumvent the impact. Possible traditional ferry crossing available on river.
Gouendo	Mud on Road		Vehicle may be taken by the mud.	All vehicles must have required mud solution supports aboard.
Ngassola	Possibility of flood situation on main road access		Main road can be cut	Circumvent the impact. Or spray operators to use their own bicycle or motorcycle. District coordinator to arrange kerosene.
Mpebougou	Mud on Road		Vehicle may be taken by the mud.	All vehicles must have required mud solution supports aboard.

ANNEX 2: OPERATION SITE REFURBISHMENTS

District	Operation Site Location	Storeroom Refurbished (Yes or No)	Soak pit Refurbished	Fencing Refurbished
Baroueli	BANIDO	YES	YES	YES
	BAROUELI TOWN	NO	YES*	YES
	BOIDIE	NO	YES*	YES
	DOTEMBOU GOU	YES	YES	YES
	DIOFORONGO	YES	YES	YES
	DOUGOUFE	NO	YES	YES
	GARNA	YES	YES	YES
	GOUENDO	YES	YES	YES
	KALAKE	YES	YES	YES
	KONOBOUGOU	YES	YES	YES
	MOABOUGOU	YES	YES*	YES*
	MPEBOUGOU	YES	YES	YES
	N'DJILLA	YES	YES	YES
	N'GASSOLA	YES	YES	YES
	NIANZANA	YES	YES	YES
	SANANDO	YES	YES	YES
	SEGUELA	YES	YES	YES
	SOMO	YES**	YES	YES
	TAMANI	YES	YES	YES
	TESSERELA	YES	YES	YES
TIGUI	YES	YES	YES	
YERBOUGOU	YES	YES	YES	
WONDOBOUGOU	YES	YES	YES	

District	Operation Site Location	Storeroom Refurbished (Yes or No)	Soak pit Refurbished	Fencing Refurbished
Bla	BENGUENE	YES	YES	YES
	BLA TOWN	YES	YES*	YES
	BOGONI	YES	YES	YES
	DIARAMANA	YES	YES*	YES
	DIEDALA	YES**	YES*	YES
	DIENA	YES	YES	YES
	DOUGOUOLO	YES	YES	YES
	FALO	YES	YES	YES
	KAZANGASSO	YES	YES	YES
	KEMENI	YES	YES*	YES
	KOULANDOUNGO U	NO	YES	YES
	KOUTIENSO	NO	YES	YES
	MARELA	YES	YES	YES
	NAMPASSO	YES	YES	YES
	NIALA	YES	YES	YES
	NIAMANA	YES	YES	YES
	PENESSO	YES	YES	YES
	SAMABOGO	YES	YES	YES
	SAMBALA	YES	YES*	YES
	TIENABOUGOU	YES	YES	YES
	TONTO	YES	YES	YES
SOMASSO	YES	YES	YES	
TOUNA	NO	YES	YES	

District	Operation Site Location	Storeroom Refurbished (Yes or No)	Soak pit Refurbished	Fencing Refurbished
	YANGASSO	YES	YES*	YES*
	BOUGOURA	YES	YES	YES
	FANI	YES	YES	YES
	TALO	YES**	YES	YES
Koulikoro	CHOLA	YES**	YES	YES
	DOUMBA	YES	YES	YES
	GOUNI	YES	YES*	YES*
	KAMANI	YES	YES	YES
	KENENKOUN	YES	YES	YES
	KOLEBOUGOU	YES	YES	YES
	KOULA	YES	YES	YES
	KOULIKOROBA	YES	YES	YES
	MONZOMBALA	YES	YES	YES
	NYAMINA	YES	YES	YES
	SIRAKOROLA	YES	YES*	YES*
	SIRAKOROBOUGO U	YES	YES	YES
	SIZANI	YES	YES	YES
	TAMANI	YES	YES	YES

*New construction (supported by AIRS).

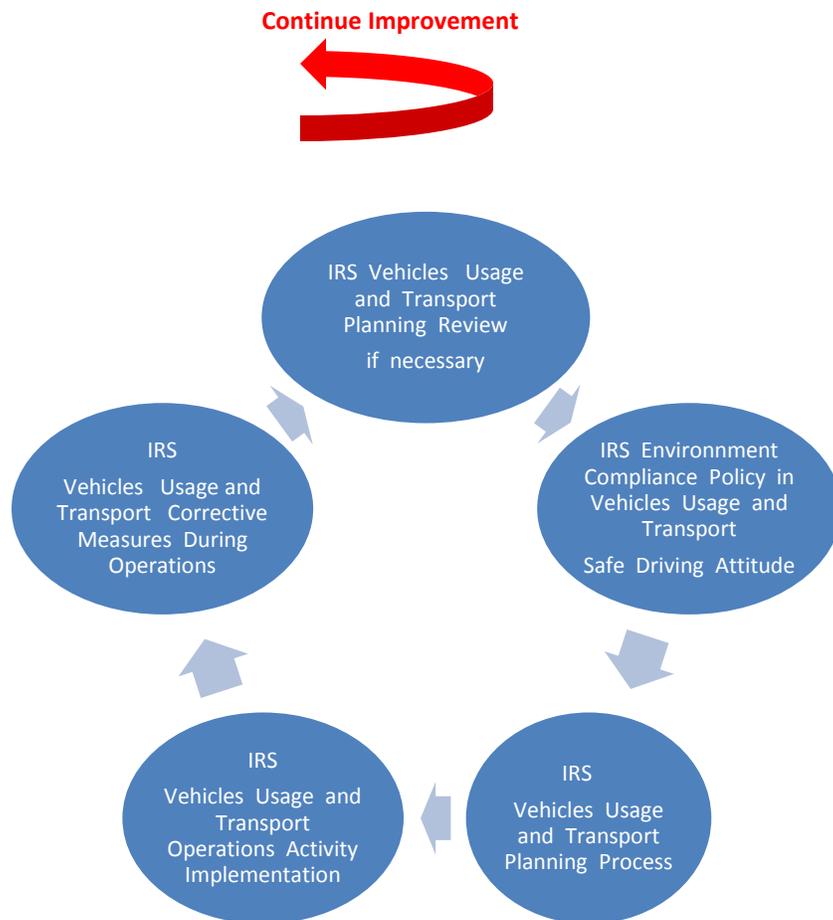
** New construction (supported by community).

ANNEX 3: 2014 IRS CAMPAIGN TRAINING PARTICIPANTS

Categories of Persons Trained	Training on IRS Delivery						Other Trainings																			
	Training of Trainers		Spraying Operations training		Medical Treatment of Intoxication Cases Training		Team Leader and Supervisor Training		Data Capture Training		Logistics Training		Coveralls Washing		Structure Enumeration/ IEC Training		Transport/ Security training		Stores security training		District Team Training		Entomological monitoring training		Radio hosts 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
Technical Directors of Community Health Center	3	2			4	5																				
District Coordinators	3	0																								
Spray Operators			57	1																						
			1	1																						
Data clerks									1	1																
								1	0																	
Community Supervisors							6	2																		
							6																			
Team Leaders			15	1									0	11												
			2	3										4												
Washers																										
District Logisticians												5	1													
												8	0													
Storekeepers																										
Warehouse keepers																										
															66	10										
															3	2										

ANNEX 4: IRS CAMPAIGN VEHICLE USAGE AND PROCESS

I. IRS VEHICLES USAGE AND TRANSPORT PROCESS DIAGRAM.



District	Mini Buses	Pick-Up/4x4	Motorbike Taxini
Koulikoro	16	3	3
Bla	27	3	3
Baraoueli	22	3	3
Total	65	9	9

ANNEX 5: KOULIKORO DISTRICT WAREHOUSE INVENTORY

AIRS MALI 2014 KOULIKORO DISTRICT POST SPRAY INVENTORY						
Item Description	Initial Stock Before IRS Campaign	Number of Item Procured	Stock Before Campaign	Consumed / Unusable Stock after IRS Campaign	Usable Stock Remaining for 2014	Notes
Internationally procured items						
Insecticide (FICAM)	22026	5260	27286	24250	3036	Nov15-Aug15
Spray Pump Hudson	251	0	251		251	
Spray Pump Goldberg	05	0	05	0	05	For test
Helmet	320	0	320	208	112	33 Not conform/ 01 Bamako office
Red Bright Vest	41	0	41	01	40	
Green Bright Vest	79	0	79	02	77	
Gumboots	290	0	290	0	290	05 from Bla
Coverall (15 Pieces From Bla)	594	76	760	400	360	70 Not conform
Thermometer Simple /or Electronic	18	10	28	03	25	
Gloves	397	312	709	529	180	40 from Bla
Gloves for Incineration	0	05	05	0	05	
Respirator Mask	10204	12000	22204	8480	13724	Local /4200U
Face shield	244	149	393	7	386	150 Brand new
Support Face Shield	403	150	553	13	540	
Spares Kit Hudson	21	0	21	0	21	
Nozzle Tip Hardened Stainless Steel (65) 8002E Catalog	140	0	140	60	80	
Nozzle Tip Hardened Stainless Steel (65) 8001E Catalog	138	0	138	0	138	
Nozzle flow reg Assembly (61) Catalog/153-400E	47	0	47	34	13	
Pump Filter Strainer (45)	120	0	120	83	37	
Extension tube assembly only (54)	69	0	69	32	37	
Nozzle flow regulator (64)	90	0	90	73	17	
Cup leather only	78	0	78	76	11	
Cup retainer (20D) (White)	124	0	124	39	85	
Plunger Adaptor (20C) (Black)	52	0	52	8	44	
Pump Cylinder Assembly Completed for 3 & 4 Gallon (3 &4 Gallon unit) Catalog (21)	67	0	67	5	62	
Supply tube only Catalog (14) "resort de régulation"	30	0	30	1	29	
Pressure Gauge with filter assembled (A)	30	0	30	11	19	
Male fitting for strainer housing (43) Catalog	128	0	128	07	127	
Local durable items						

Steel Container	01	0	01	0	01	
Solar Panel	0	0	0	0	0	N/A
Solar Mobile Lamp	0	03	03	0	03	
Mobile soak pit	03	0	03	0	03	
Spatula for Coal Load	0	14	14	0	14	
Heavy battery for solar panel	0	0	0	0	0	N/A
Electric Inverter	0	0	0	0	0	N/A
Ventilator /Wall	07	02	09	04	05	03 In Use
Bucket Plastic 60/ 40/30 Liters	169	0	169	17	152	
Bucket metal 10/15 liters	80	0	80	0	80	01 In Office
Bucket Plastic /15-10-20 Liters	38	02	40	04	36	
Waste bin Hard plastic	34	04	38	02	36	
Cup /metal /plastic 1 Liter	97	0	97	33	64	
Wood seat	30	0	30	0	30	
Scoreboard	20	0	20	0	20	
Shovel with short handle	49	0	49	0	49	
Fire extinguisher	24	0	24	0	24	06GF Next service Jan 15
Operator Bag	35	200	235	227	08	
Monitor bag	12	0	12	11	01	05 From Bla
Tent pour sites mobile	0	18	18	0	18	
Life Jacket	07	0	07	0	07	
Tarpaulin Simple	62	0	62	30	32	
Tarpaulin for soak pit mobile floor	0	04	04	0	04	
Raincoat	330	0	330	18	312	
Head Lamp Operator	60	192	252	90	162	23 From Bla 40 Using Battery R20
Lamp Guard	17	10	27	0	27	
Whistle for Guard	28	0	28	02	24	04 Missed
Water Filter	234	0	234	08	226	
Plastic Drum/160/200 Liters	251	0	251	0	235	16 Sent Bla
Bar Angle	63	0	63	4	59	
Fence	14	0	14	03	11	
Metal String 1mm /Roll	15	03	18	11	07	
Metal String 2.5mm/Roll	01	0	01	0	01	
Pincer	03	0	03	01	02	01 Missed
Adjustable Wrench	04	0	04	0	04	
Screw Driver	04	0	04	01	03	01 Missed
Binete	0	05	05	0	05	
Tape 10m	0	03	03	0	03	
Chair /Wood	04	0	04	0	04	
Desk/Wood	01	0	01	0	01	

Matt/Straw/Plastic	31	05	36	01	35	
Flipchart	0	0	0			
Empty Barrel/Metal 200 Liters.	01	01	01	0	01	
Plastic Drum /20L	23	10	33	02	31	02 Missed
Local non-durable items						
Plastic Operator	421	0	421	10	411	
Waste Plastic Bag	510	70	580	240	340	
Plastic Roll	01	0	01	01	0	
Light Engine 1.20m source Generator	02	04	06	0	06	
Ampoule 1.20m source generator	0	10	10	01	09	
Light Engine 0.60m source generator	06	04	10	0	10	
Ampoule 0.60m source generator	04	10	14	04	10	
Light engine 0.60m source solar panel	0	0	0	0	0	N/A
Ampoule 0.60m source solar panel	0	0	0	0	0	N/A
Light engine Oval source solar panel	0	0	0	0	0	N/A
Ampoule oval source solar panel	0	0	0	0	0	N/A
Towel	426	200	626	480	146	
Teflon	09	05	14	01	13	
Sweeper Traditional	06	02	08	05	03	
Sweeper Industrial	47	02	49	01	48	
Local office consumables						
Stapler	38	0	38	0	38	
Envelop A4	50	100	350	25	125	
Glue Stick	30	0	30	1	29	
Chrono Hard Folder	23	05	28	0	28	
Folder Cartoon Simple	500	1000	1500	900	600	
Archive box	21	0	21	0	21	
Cover Cartoon	486	0	486	0	486	
Flash drive	03	0	03	0	03	
Ruler 1m	03	0	03	0	03	
Ruler 30 Cm	36	0	36	03	33	
Paper Driller	01	0	01	0	01	
Pin Box of 45 Pins	10	100	110	12	98	
Staples box "Agraphes"	146	0	146	27	119	
Calculator	32	07	39	05	34	
Copy book	0	0	0	0	0	
Bloc Notes	41	0	41	28	13	
Book Register	16	18	44	31	13	
Paper Ream A4	0	50	50	0	50	
Sticker for Notes/"Paquet" of 100 Sheet	10	0	10	07	03	
Permanent Marker	40	2060	2100	1260	840	

Pen Blue	513	0	513	269	244	
Pen Red	0	0	0	0	0	
Plastic Folder With Cover	49	258	307	197	110	
Fluid Corrector	05	0	05	02	03	
Tape Transparent GF	0	30	30	25	05	
Chemical and assimilates						
Activated carbon	0	01	01	0	01	Package
Pregnancy Test	65	48	113	69	44	Sep 2017
First Aid Kit	12	40	52	50	02	
Soap song	96	3648	3744	3349	395	
Soap Powder/Sachet	0	18600	18600	17268	1332	
Bleach/"Javel" 1L	09	70	79	55	24	
Battery /R20	2468	0	2468	2468	0	1200 From Bla All in Poor Status
Battery AAA	79	2208	2287	1463	824	
Battery AA	1167	0	1167	36	1131	
Lubricant Box 1Kg	01	0	01	0	01	
Distilled Water 1L	0	0	0	0	0	
Glue Liquid Box 1Kg	01	01	02	0	02	
Oil Motorbike/ quartz 5000 Total /Liter	05	20	25	20	05	
Mixing Oil Motorbike 15W40 Shell/liter	10	100	110	100	10	
Motorbikes and spare parts						
Motorbike with locker	05	0	05	0	05	
Hemet Motorbike	05	0	05	0	05	
Vilebrequin & Rod Assembly	04	03	07	01	06	
Tyre Motorbike Front	04	05	09	02	07	
Tyre Motorbike Back	01	05	06	06	0	
Tube Motorbike	0	05	05	05	0	
Wheel	0	04	04	01	03	
Segment YB100	02	03	05	0	05	
"Disque" YB125	0	0	0	0	0	
Odometer	0	0	0	0	0	
Direction Light Single	04	0	04	0	04	
Kit Motorbike "(Chain,petit pion,Grand Pion)"	0	05	05	05	0	
Spares Trailer for Motorbike (roulement) YB100	05	0	05	0	05	
Piston Motorbike YB100	0	05	05	05	0	
Boogie YB100	02	10	12	09	03	
Local IEC tools						
T Shirts	0	0	0	0	0	
IRS Card	10782	16433	27215	14539	12676	
Leaflet	7818	10996	18814	10022	8792	

Hat	0	0	0	0	0	
Banderole sensitization/ Operator GF	01	0	01	0	01	Spray Operator Picture
Metal not allowed drink eat smoke	02	04	06	03	03	
Metal skull	02	06	08	01	07	
Sticker not allowed drink eat smoke	0	10	10	10	0	
Sticker skull	0	10	10	10	0	

ANNEX 6: BLA DISTRICT WAREHOUSE INVENTORY

AIRS-MALI 2014 BLA DISTRICT POST SPRAY INVENTORY FIGURE						
Item Description	Initial Stock Before IRS Campaign	Number of Item Procured	Stock Before Campaign	Consumed / Unusable Stock after IRS Campaign	Usable Stock Remaining for 2014	Notes
Internationally procured items						
Insecticide (ACCTELLIC 300CS-GSH)	0	38112	38112	36800	1312	Exp May15
Spray Pump Hudson	337	0	337	300	37	
Spray Pump Goldberg	05	0	05	0	05	In testing
Helmet	439	0	439	68	355	*40 Local *16 Sent/Kkro
Red Bright Vest	42	0	42	0	42	Supervisor
Green Bright Vest	111	0	111	0	110	Team leader 01 Missed
Gumboots	479	0	479	0	479	
Coverall	955	90	1045	650	395	15 From Brli
Thermometer Simple /or Electronic	28	0	28	0	28	
Gloves	96	648	744	704	40	
Gloves for Incineration	0	0	0	0	0	Only Kkro
Respirator Mask	6360	12000	18360	15720	2640	
Face shield	362	250	612	0	612	
Bracket Face Shield	499	251	750	2	748	
Spares Kit Hudson	43	0	43	0	43	
Nozzle Tip Hardened Stainless Steel (65) 8002E Catalog	910	0	910	272	638	
Nozzle Tip Hardened Stainless Steel (65) 8001E Catalog	0	0	0	0	0	Not use anymore
Nozzle Tip Hardened Stainless Assembly (65) Catalog/153-400E	497	0	497	54	443	
Pump Filter Strainer (45)	504	0	504	25	479	
Extension tube assembly only (54)	95	0	95	53	42	
Nozzle flow regulator (64)	188	0	188	188	0	
Cup leather only	352	0	352	34	318	
Cup retainer (20D) (White)	291	0	291	106	185	
Plunger Adaptor (20C) (Black)	89	0	89	45	44	
Pump Cylinder Assembly Completed for 3 & 4 Gallon (3 &4 Gallon unit) Catalog (21)	86	0	86	36	50	
Supply tube only Catalog (14) "resort de régulation"	34	0	34	9	25	
Pressure Gauge with filter assembled (A)	14	0	14	12	2	
Male fitting for strainer housing (43) Catalog	149	0	149	3	146	
LOCAL DURABLE ITEMS						

Steel Container	01	0	01	0	01	
Solar Panel	02	0	02	0	02	
Solar Mobile Lamp	0	0	0	0	0	
Mobile soak pit	03	0	03	0	03	
Spatula for Coal Load	0	0	0	0	0	
Heavy battery for solar panel	0	0	0	0	0	
Electric Inverter	0	0	0	0	0	
Ventilator /Wall	0	5	5	0	5	01 In office
Bucket Plastic 60/ 40/30 Liters	133	0	132	0	132	01 Missed
Bucket metal 10/15 liters	105	0	105	0	105	09/From Brli
Bucket Plastic /15-10-20 Liters	42	0	42	13	29	
Waste bin Hard plastic	44	3	47	3	44	
Cup /metal /plastic 1 Liter	73	229	302	5	297	
Wood seat	50	0	50	0	48	02 Missed
Scoreboard	26	0	26	0	26	
Shovel with short handle	62	0	62	01	60	01 Missed
Fire extinguisher	34	0	34	0	34	06/G Format
Operator Bag	363	70	433	344	89	
Monitor bag	3	5	8	2	6	
Tent pour sites mobile	0	26	26	0	26	
Life Jacket	04	0	04	0	04	
Tarpaulin Simple	149	06	155	33	122	
Tarpaulin for soak pit mobile floor	0	07	07	0	07	
Raincoat	381	0	381	22	359	14 Data capture center
Head Lamp Operator	0	288	288	0	263	25 Sent/Kkro
Lamp Guard	20	10	30	0	28	02 Missed
Whistle for Guard	26	10	36	0	32	04 Missed
Water Filter	418	0	418			
Plastic Drum/160/200 Liters	371	0	371	0	371	16 From kkro
Bar Angle	0	0	0	0	0	
Fence	10	0	10	07	03	
Iron String 1mm	0	28	28		28	
Iron String 2.5mm	0	0	0	0	0	
Pincer	04	0	04	0	03	01 With logistician
Adjustable Wrench	04	0	04	0	04	
Screw Driver	15	0	15	01	14	
Binate	0	06	06	0	06	
Tape 10m	0	03	03	1	02	01 Missed Diedala
Chair /Metal	03	0	03	0	03	
Desk/Wood/Metal	03	0	03	0	03	02/Metal and 01/Wood
Matt/Straw/Plastic	32	5	37	0	32	05 Missed

Flipchart	03	0	03	0	03	
Empty Barrel/Metal 200 Liters.	01	0	01	0	01	
Plastic Drum /20L	16	10	26	0	28	
LOCAL NON- DURABLE ITEMS						
Plastic Operator	576	0	576	27	549	
Waste Plastic Bag	651	70	721	648	73	
Plastic Roll	0	0	0	0	0	
Light Engine 1.20m source Generator	0	0	0	0	0	
Ampoule 1.20m source generator	0	0	0	0	0	
Light Engine 0.60m source generator	07	0	07	0	07	
Light ampoule oval source generator	0	04	0	0	04	
Light engine Oval source solar panel	0	0	0	0	0	
Ampoule oval source solar panel	0	0	0	0	0	
Towel	648	400	1048	59	989	
Teflon	13	5	18	0	18	
Sweeper Traditional	06	0	06	0	06	
Sweeper Industrial	54	02	56	02	54	
LOCAL OFFICE CONSUMABLES						
Stapler	34	0	34	0	31	03 /Marela , Tienabougou/ Diaramana
Envelop A4	75	100	175	50	125	
Glue Stick	48	0	48	0	48	
Chrono Hard Folder	35	05	40	0	40	
Folder Cartoon Simple	380	1000	1380	1230	150	
Archive box	224	0	224		200	
Cover Cartoon	0	0	0	0	0	
Flash drive	05	0	05	0	05	
Ruler 1m	08	04	12	0	05	06 To Baraoueli 01 Missed Kemeni
Ruler 30 Cm	32	0	32	04	39	
Paper Driller	43	0	43	0	01	
Pin Box of 45 Pins	49	0	49	01	48	
Staples box "Agraphes"	164	0	164	78	86	
Calculator	52	07	59	14	45	01 Log 01 Coord 01 Driver
Copy book	0	0	0	0	0	
Bloc Notes	44	100	144	30	114	
Book Register	15	27	42	32	10	
Paper Ream A4	0	0	0	0	0	
Sticker for Notes/"Paquet" of 100 Sheet	24	0	24	10	14	
Permanent Marker	477	100	577	1176	1124	

Pen Blue	218	500	718	718	0	
Pen Red	71	0	71	04	67	
Plastic Folder With Cover	50	303	353	327	26	
Fluid Corrector	09	0	09	0	09	
Tape Transparent GF	02	20	22	22	0	
CHEMICALS & ASSIMILATES						
Activated carbon	0	01	01	0	01	
Pregnancy Test	70	70	140	80	60	Exp Sep17
First Aid Kit	38	70	108	55	53	
Soap song	192	6096	6288	6248	40	
Soap Powder/Sachet	3000	22200	25200	23158	2042	
Bleach/"Javel" 1L	0	144	144	132	12	
Battery /R20	240	0	240	240	0	240 From Baraoueli
Battery AAA	232	3312	3544	2344	1200	
Battery AA	320	0	320	80	240	
Lubricant Box 1Kg	0	0	0	0	0	
Distilled Water 1L	14	0	14	0	14	
Glue Liquid Box 1Kg	0	1	1	1	0	
Oil Motorbike/ quartz 5000 Total /Liter	15	20	35	15	20	
Mixing Oil Motorbike 15W40 Shell/liter	80	50	130	129	01	
MOTORBIKES & SPARE PARTS						
Motorbike with locker	05	0	05	0	05	06 Years old
Hemet Motorbike	05	0	05	0	05	
Vilebrequin & Rod Assembly	08	0	08	0	08	
Tyre Motorbike Front	05	0	05	0	05	
Tyre Motorbike Back	04	0	04	04	0	
Tube Motorbike	08	05	13	03	10	
Wheel Front	01	0	01	0	01	
Wheel Back	01	0	01	01	0	
Segment motorbike cylinder	02	03	05	01	04	
"Disque" YB125	0	0	0	0	0	N/A
Odometer	01	0	01	0	01	
Direction Light single	01	0	01	0	01	02 /Pairs
Kit Motorbike "(Chain,petit pion,Grand Pion)"	04	02	06	06	0	
Spares Trailer for Motorbike (roulement)	03	0	03	0	03	
Piston Motorbike YB100	02	03	05	0	05	
Boogie YB100	05	10	15	10	05	
LOCAL IEC TOOLS						
T Shirts	0	0	0	0	0	
IRS Card	8000	28000	36000	27200	8800	
Leaflet	23	19500	19523	16123	3400	

Hat	0	0	0	0	0	
Banderole Banderole sensitization Operator GF	0	0	0	0	0	
Metal not allowed drink eat smoke	0	07	07	0	07	
Metal dead sign	0	07	07	01	06	
Sticker not allowed drink eat smoke	33	20	53	22	31	
Sticker Skull	60	20	80	80	0	

ANNEX 7: BAROUELI DISTRICT WAREHOUSE INVENTORY

AIRS-MALI 2014 BAROUELI POST PRAY INVENTORY FIGURE						
Item Description	Initial Stock Before IRS Campaign	Number of Item Procured	Stock Before Campaign	Consumed / Unusable Stock after IRS Campaign	Usable Stock Remaining for 2014	Notes
OFFSHORE ITEMS						
Insecticide (ACCTELLIC 300CS-GSH)	0	37728	37728	28900	8636	Exp May15
Spray Pump Hudson	248	0	248	0	248	
Spray Pump Goldberg	05	0	05	00	05	
Helmet	369	0	369	26	341	01 Missed
Red Bright Vest	42	0	42	0	42	
Green Bright Vest	106	0	106	0	106	
Gumboots	386	0	386	0	381	*01 Sent to Kkro whse *04 To be recovered from Bla district
Coverall (15 Pieces From Bla)	765	85	850	465	385	15 Send to Bla wshe;
Thermometer Simple /or Electronic	48	0	47	01	47	01 missed 21/ electronic
Gloves	910	0	910	566	344	
Gloves for Incineration	0	0	0	0	0	Only Kkro
Respirator Mask	16840	12000	28840	10480	18360	
Face shield	285	200	485	01	484	01 Missed
Support Face Shield	429	200	629	42	586	01 Missed
Spares Kit Hudson	22	0	22	0	22	
Nozzle Tip Hardened Stainless Steel (65) 8002E Catalog	151	0	151	74	77	
Nozzle Tip Hardened Stainless Steel (65) 8001E Catalog	12	0	12	0	12	
Nozzle Tip Hardened Stainless Assembly (65) Catalog/153-400E	177	0	177	9	168	
Pump Filter Strainer (45)	106	0	106	0	106	
Extension tube assembly only (54)	60	0	60	16	44	
Nozzle flow regulator (64)	138	0	138	0	138	
Cup leather only	247	0	247	04	243	
Cup retainer (20D) (White)	0	259	259	15	244	
Plunger Adaptor (20C) (Black)	29	0	29	24	05	
Pump Cylinder Assembly Completed for 3 & 4 Gallon (3 &4 Gallon unit) Catalog (21)	38	0	38	0	38	
Supply tube only Catalog (14) "resort de régulation"	30	0	30	0	30	
Pressure Gauge with filter assembled (A)	29	0	29	0	29	

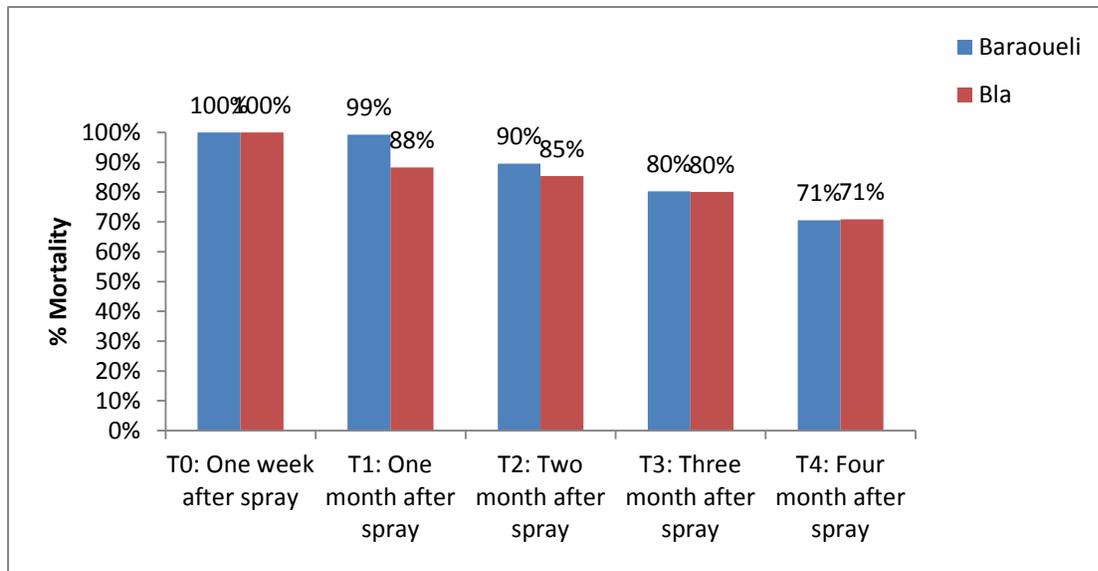
Male fitting for strainer housing (43) Catalog	52	0	52	21	31	
LOCAL DURABLE ITEMS						
Mobile soak pit	0	03	03	0	03	
Steel Container	01	0	01	0	01	
Solar Panel	02	0	02	0	02	
Heavy battery for solar panel	07	0	07	02	05	02 From Bla Whse
Electric Inverter	02	0	02	01	01	
Ventilator /Wall	4	2	6	0	6	04 In use
Bucket Plastic 60/ 40/30 Liters	133	0	132	0	132	01 Missed
Bucket metal 10/15 liters	103	0	103	0	103	
Bucket Plastic /15-10-20 Liters	0	0	0	0	0	
Waste bin Hard plastic	33	0	33	0	33	
Cup /metal /plastic 1 Liter	57	185	242	01	239	02 Missed
Wood seat	23	15	38	0	38	
Scoreboard	24	0	24	0	24	01 Konobogou H center
Shovel with short handle	53	0	53	0	52	01 In use
Fire extinguisher	29	0	29	0	29	06/G Format
Operator Bag	355	30	385	354	31	
Monitor bag	13	0	13	04	04	05 Been moved Kkro
Tent pour sites mobile	0	24	24	0	24	
Life Jacket	04	0	04	0	04	
Tarpaulin	98	07	105		105	
Tarpaulin for soak pit mobile floor	0	03	03	0	03	
Raincoat	243	113	356			
Head Lamp Operator	07	220	227	0	222	05 Missed
Lamp Guard	01	13	24	0	20	04 Missed
Whistle for Guard	45	0	45	0	41	04 Missed
Water Filter	185	0	185	37	148	65 From Bla
Plastic Drum/160/200 Liters	18	0	0	0	18	205 in Hcenters
Bar Angle	29	0	29	10	19	
Fence	0	0	0	0	0	
Iron String 1mm	0	24	24	1	23	
Iron String 2.5mm	0	0	0	0	0	
Pincer	03	0	03	0	02	01 Missed
Adjustable Wrench	03	01	04	0	04	
Screw Driver	05	0	05	0	03	02 Missed
Binate	0	02	02	0	02	
Chair /Metal	4	0	4	0	4	
Desk/Wood/Metal	1	0	1	0	1	
Matt/Straw/Plastic	22	05	27	0	26	01 Missed

Cord 6m	0	0	0	0	0	
Wood Sticks	0	0	0	0	0	
Flipchart	0	0	0	0	0	
LOCAL NONE DURABLE ITEMS						
Plastic Operator	349	0	349	13	360	
Waste Plastic Bag	130	70	200	155	45	
Plastic Roll	0	0	0	0	0	
Light Engine 1.20m source Generator	03	0	03	0	03	
Ampoule 1.20m source generator	01	0	01	01	0	
Light Engine 0.60m source generator	0	0	0	0	0	
Ampoule 0.60m source generator	0	0	0	0	04	
Light engine 0.60m source solar panel	0	0	0	0	0	
Ampoule 0.60m source solar panel	0	0	0	0	0	
Light engine Oval source solar panel	0	0	0	0	0	
Ampoule oval source solar panel	0	12	12	03	09	
Towel	995	300	1295	185	1110	300 Brand new
Teflon	14	5	19	0	19	
Sweeper Traditional	06	0	06	0	06	
Sweeper Industrial	54	0	54	0	54	
Empty Barrel/Metal 200 Liters.	2	0	2	0	02	
Plastic Drum /20L	19	10	29	0	29	
LOCAL OFFICE CONSUMABLES						
Stapler	30	0	30	0	30	
Envelop A4	148	100	248	0	248	
Glue Stick	20	0	20	13	07	
Chrono Hard Folder	25	05	30	01	29	
Folder Cartoon Simple	1800	0	1800	946	854	
Archive box	157	0	157		157	
Cover Cartoon	0	0	0	0	0	
Flash drive	2	2	4	0	04	
Ruler 1m	01	0	01	0	01	
Ruler 30 Cm	32	0	32	0	32	
Paper Driller	01	01	01	0	01	
Pin Box of 45 Pins	109	10	119	0	119	
Staples box "Agraphes"	290	0	290	49	241	
Calculator	30	07	37	0	37	
Copy book	0	0	0	0	0	
Bloc Notes	47	0	47	25	22	
Book Register	15	23	38	33	05	
Paper Ream A4	0	0	0	0	0	
Sticker for Notes/"Paquet" of 100 Sheet	17	0	17	05	12	

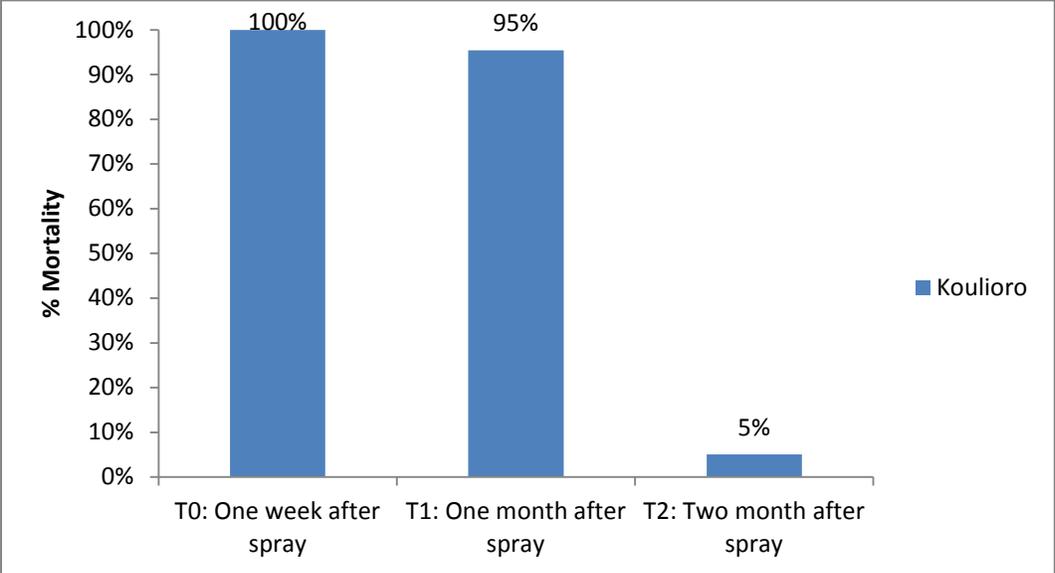
Permanent Marker	70	2230	2300	1176	1124	
Pen Blue	550	0	550	550	0	
Pen Red	150	0	150	24	126	
Plastic Folder With Cover	60	303	363	336	27	
Fluid Corrector	09	0	09	01	08	
Tape Transparent GF	02	20	22	06	16	
CHEMICALS & ASSIMILATES						
Pregnancy Test	10	80	90	43	47	Exp Sep17
First Aid Kit	13	60	73	72	01	
Soap song	71	3888	3959	3959	0	
Soap Powder/Sachet	8400	12900	21300	14400	6900	
Bleach/"Javel" 1L	29	70	99	81	18	
Battery /R20	2756	0	2756	2756	0	1222 in poor status
Battery AAA	148	2736	2884	2488	396	
Battery AA	612	0	612	28	584	
Lubricant Box 1Kg	0	0	0	0	0	
Distilled Water 1L	16	0	16	0	16	
Glue Liquid Box 1Kg	03	01	04	0	04	
Oil Motorbike/ quartz 5000 Total /Liter	13	25	38	27	11	
Mixing Oil Motorbike 15W40 Shell/liter	186	0	186	06	180	
MOTORBIKES & SPARE PARTS						
Motorbike with locker	05	0	05	0	05	06 Years old
Hemet Motorbike	05	0	05	0	05	
Vilebrequin & Rod Assembly	0	0	0	0	0	
Tyre Motorbike Front	04	05	09	04	05	
Tyre Motorbike Back	05	05	10	10	0	
Tube Motorbike	05	05	10	07	03	
Wheel Front	0	0	0	0	0	
Wheel Back	0	02	02	02	0	
Segment	0	0	0	0	0	
"Disque" YB125	0	02	02	0	02	
Odometer	0	01	01	01	0	
Direction Light single	0	0	0	0	0	
Kit Motorbike "(Chain,petit pion,Grand Pion)"	0	03	03	03	0	
Spares Trailer for Motorbike (roulement)	0	0	0	0	0	
Piston Motorbike YB125	0	02	02	0	02	
Boogie YB125	10	10	20	0	20	
LOCAL IEC TOOLS						
T Shirts	0	0	0	0	0	
IRS Card	0	20085	20085	10085	10000	
Leaflet	0	11004	11004	9004	2000	

Hat	0	0	0	0	0	
Banderole sensitization Operator GF	0	0	0	0	0	
Metal not allowed drink eat smoke	04	07	07	0	11	
Metal skull	0	07	07	0	07	
Sticker not allowed drink eat smoke	5	15	22	0	22	
Sticker skull	0	15	15	14	01	

ANNEX 8: WHO CONE BIOASSAY TEST RESULTS 24 HOURS AND ONE MONTH AFTER SPRAYING WITH ACTELIC 300 CS, 2014



ANNEX 9: WHO CONE BIOASSAY TEST RESULTS 24 HOURS AND ONE MONTH AFTER SPRAYING WITH BENDIOCARB



ANNEX 10: MID-SPRAY ENVIRONMENTAL INSPECTION RESULTS

DISTRICT	Site	Have residents been informed to wash itchy skin, and to go to a health clinic if they don't feel well after their house has been sprayed?	Are all animals kept outside the structure during spraying and for 2.5 hrs. afterward?	Are the residents told not to plaster, paint or clean the sprayed surfaces?
BLA	Penesso	yes	yes	yes
BLA	Niala	no	no	yes
BLA	Diedala	yes	yes	yes
BLA	Diedala	yes	yes	yes
BLA	Samabogo	yes	yes	yes
BLA	Samabogo	yes	yes	yes
BLA	Penesso	yes	yes	yes
BARAOUELI	Tigui	no	yes	no
BARAOUELI	Dotembougou	yes	yes	no
BARAOUELI	Dotembougou	yes	yes	yes
BARAOUELI	Tigui	yes	yes	yes
BARAOUELI	Tigui	yes	yes	no
BARAOUELI	Mpembougou	yes	yes	yes
BARAOUELI	Mpembougou	yes	yes	yes
KOULIKORO	Doumba	yes	yes	yes
KOULIKORO	Doumba	yes	yes	yes
BARAOUELI	Tamani	no	yes	yes
BARAOUELI	Gouendo	yes	yes	yes
BARAOUELI	Moabougou	yes	yes	yes
BARAOUELI	Dougoufe	yes	yes	yes
BARAOUELI	Mpembougou	yes	yes	yes
BARAOUELI	Seguela	yes	yes	no
KOULIKORO	Tienfala	yes	yes	yes
KOULIKORO	Tienfala	yes	yes	yes
KOULIKORO	Sizani	yes	yes	yes
KOULIKORO	Sizani	yes	yes	yes
KOULIKORO	Tamani	no	yes	no
KOULIKORO	Tamani	yes	yes	yes
KOULIKORO	Kamani	yes	yes	yes
KOULIKORO	Kamani	yes	yes	yes
KOULIKORO	Koulikoroba	yes	yes	yes
KOULIKORO	Koulikoroba	yes	yes	no
KOULIKORO	Tougouni	no	yes	no

DISTRICT	Site	Have residents been informed to wash itchy skin, and to go to a health clinic if they don't feel well after their house has been sprayed?	Are all animals kept outside the structure during spraying and for 2.5 hrs. afterward?	Are the residents told not to plaster, paint or clean the sprayed surfaces?
KOULIKORO	Tougouni	no	yes	no
KOULIKORO	Other	no	yes	no
KOULIKORO	Other	no	yes	no
KOULIKORO	Other	no	yes	no
KOULIKORO	Other	no	yes	yes
KOULIKORO	Chola	no	yes	yes
KOULIKORO	Tombougou	yes	yes	yes
KOULIKORO	Kamani	yes	yes	yes
KOULIKORO	Kolebougou	yes	yes	yes
KOULIKORO	Kolebougou	yes	yes	yes
KOULIKORO	Niamina	yes	yes	yes
KOULIKORO	Koulikoroba	no	yes	no
KOULIKORO	Koulikoroba	no	yes	no
KOULIKORO	Sirakorola	no	yes	no
KOULIKORO	Sirakorola	no	yes	yes
KOULIKORO	Sirakorola	yes	yes	no
KOULIKORO	Massala	yes	yes	yes

ANNEX 11: POST-SPRAY ENVIRONMENTAL INSPECTION RESULTS

DISTRICT	SITE	Soak pit with grasses on surrounding area	Stores not adequate clean or clean at the presence of inspection team
BARAOUELI	Tesserela		
BARAOUELI	Ngassola		
BARAOUELI	Moabougou	X	
BARAOUELI	Gouendo	X	
BARAOUELI	Mpembougou	X	
BARAOUELI	Sanando	X	
BARAOUELI	Dioforongo	X	
BARAOUELI	Baraoueli_town	X	
BARAOUELI	Niazana	X	
BARAOUELI	Niazana	X	
BARAOUELI	Seguela		
BARAOUELI	Ndjilla		
BARAOUELI	Kalake		
BARAOUELI	Banido	X	
BARAOUELI	Dougoufe		
BARAOUELI	Somo	X	
BARAOUELI	Ngarna	X	
BARAOUELI	Tamani		
BARAOUELI	Dotembougou		
BARAOUELI	Boidie		
BARAOUELI	Wondobougou		
BARAOUELI	Wondobougou		
BARAOUELI	Konobougou		
BARAOUELI	Tigui	X	
BARAOUELI	Yerebougou	X	
KOULIKORO	Kamani		
KOULIKORO	Kenenkoun		
KOULIKORO	Gouni		
KOULIKORO	Tombougou	X	X
KOULIKORO	Koula		X
KOULIKORO	Tienfala	X	X
KOULIKORO	Tougouni	X	
KOULIKORO	Sirakorobougou	X	
KOULIKORO	Niamina		

DISTRICT	SITE	Soak pit with grasses on surrounding area	Stores not adequate clean or clean at the presence of inspection team
KOULIKORO	Kamani		
KOULIKORO	Chola		
KOULIKORO	Monzombala	X	
KOULIKORO	Sirakorola		X
KOULIKORO	Sizani		
KOULIKORO	Doumba	X	
KOULIKORO	Kolebougou		
BLA	Niamana		
BLA	Falo		
BLA	Tienabougou		
BLA	Diena		
BLA	Marela		
BLA	Nampasso		
BLA	Kanzangasso		
BLA	Yangasso		
BLA	Koutienso		
BLA	Dougouolo		
BLA	Diedala		
BLA	Blatown		
BLA	Touna		
BLA	Niala		
BLA	Talo		
BLA	Fani		
BLA	Koulandougou		
BLA	Bougoura		
BLA	Penesso		
BLA	Diaramana		
BLA	Tonto		
BLA	Kemeni		
BLA	Samabogo		
BLA	Somasso		
BLA	Bogoni		
BLA	Benguene		
BLA	Sambala		

ANNEX 12: AIRS MALI M&E PLAN INDICATOR MATRIX

Updated: November 11, 2014

Performance Indicator	Indicator Definition	Project Year(s) Reporting	Data Source(s) and Reporting Frequency	Disaggregate	PMI/ AIRS Indicator	Annual Targets and Results					
						Year 1		Year 2		Year 3	
						Target	Results	Target ³	Results	Target	Results
Component 1: Establish cost-effective supply chain mechanisms including procurement, distribution and storage of IRS-related commodities and execute all aspects of logistical plans for IRS-related activities.											
1.1 Procurement											
1.1.1 Number and percentage of international insecticide procurement orders delivered in country, at port of entry, at least 30 days prior to the start of spray operations	<p><i>[Numerator:</i> Number of international insecticide procurements delivered in country, at port of entry, at least 30 days prior to the start of spray operations]</p> <p><i>[Denominator:</i> Total number of international insecticide procurements]</p> <p><i>Calculation:</i> [Numerator ÷ Denominator] x 100</p>	Y1, Y2, Y3	<p><i>Data source:</i> Project records – ex: international procurement documents, air way bills, commercial invoices</p> <p><i>Reporting frequency:</i> Each spray season (annual/ semi-annual)</p>	By Spray Campaign	AIRS	N.A; 80%	1;100%	1; 100%	3; 33%	2; 100%	2; 100%
1.1.2 Number and percentage of international procurement orders for equipment, including PPE, received at port of entry, 30 days prior to start of spray operations.	<p><i>[Numerator:</i> Number of international procurements for equipment, including PPE, at port of entry, 30 days prior to start of spray operations]</p> <p><i>[Denominator:</i> Total number of international procurements for</p>	Y1, Y2, Y3	<p><i>Data source:</i> Project records</p> <p><i>Reporting frequency:</i> Each spray season (annual/ semi-annual)</p>	By Spray Campaign	AIRS	N.A.; 85%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%

³ Targets to be confirmed upon 2013 Work Plan approval

Performance Indicator	Indicator Definition	Project Year(s) Reporting	Data Source(s) and Reporting Frequency	Disaggregate	PMI/ AIRS Indicator	Annual Targets and Results					
						Year 1		Year 2		Year 3	
						Target	Results	Target ³	Results	Target	Results
	equipment, including PPE.] <i>Calculation:</i> [Numerator ÷ Denominator] x 100										
1.1.3 Number and percentage of local PPE procurement orders that are delivered to the main warehouse 14 days before the start of spray operations	[[<i>Numerator:</i> Number of local PPE procurements delivered 14 days before the start of spray operations] [<i>Denominator:</i> Total number of local PPE procurements.] <i>Calculation:</i> [Numerator ÷ Denominator] x 100	Y1, Y2, Y3	<i>Data source:</i> Project records – ex: such as delivery notes, goods receiving notes, inventory control cards <i>Reporting frequency:</i> Each spray season (annual/ semi-annual)	By Spray Campaign	AIRS	#N.A ⁴ ; 80%	N.A.	1; 100%	1; 100%	1; 100%	1; 100%
1.1.4 Successfully completed spray operations without an insecticide stock-out	Milestone: (Achieved/Not Achieved)	Y1, Y2, Y3	<i>Data source:</i> Project records – ex: inventory control cards <i>Reporting frequency:</i> Each spray season (annual/ semi-annual)	By Spray Campaign	AIRS	Achieved	Achieved	Achieved	Achieved	Achieved	Achieved

⁴ Number of local procurements not targeted in Year 1.

1.2 In-country Logistics, Warehousing, and Training											
1.2.1 Number and percentage of logistics, warehouse managers, and storekeepers trained in IRS supply chain management	<p>[Numerator: Total number of logistics and warehouse managers trained in IRS supply chain management using AIRS Project resources.]</p> <p>[Denominator: Total number of AIRS logistics and warehouse managers.]</p> <p>Calculation: [Numerator ÷ Denominator] x 100</p>	Y1, Y2, Y3	<p>Data source: Routine training records</p> <p>Reporting frequency: Semi-annually</p>	By Spray Campaign By Gender	PMI	74; 100%	74; 100%	74; 100%	74; 100%	74; 100%	74; 100%
1.2.2 Number and percentage of base stores where physical inventories are verified by up-to-date stock records	<p>[Numerator: Number of base stores where physical inventories are verified by up-to-date stock records]</p> <p>[Denominator: Total number of base stores audited.]</p> <p>Calculation: [Numerator ÷ Denominator] x 100</p> <p>(See PIRS for details on sample size for operational audits)</p>	Y2, Y3	<p>Data source: Project records - ex: inventory control cards</p> <p>Reporting frequency: Each spray season (annual/ semi-annual)</p>	By Spray Campaign	AIRS	69; 85%	69; 100%	69; 100%	69; 100%	69; 100%	69; 100%
1.2.3 Submit up-to-date inventory records to AIRS Home Office 30 days after the end of each spray campaign	Milestone: (Completed/Not Completed)	Y2, Y3	<p>Data source: Project records - ex: warehouse inventory control cards</p> <p>Reporting frequency: Each spray season (annual/ semi-annual)</p>	By Spray Campaign	AIRS	N.A.	N.A.	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 IRS country work plan developed and submitted on time	Milestone: (Completed/Not Completed)	Y1, Y2, Y3	<i>Data source:</i> Project records <i>Reporting frequency:</i> Annually		AIRS	Completed	Completed	Completed	Completed	Completed	Completed
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2.2 Support of Safety and Health Best Practices and Compliance with USAID and Host Country Environmental Regulations

2.2.1 SEA/letter report submitted on time ⁵	Milestone: (Completed/Not Completed)	Y1, Y2, Y3	<i>Data source:</i> Project records – submitted SEAs/ letter reports <i>Reporting frequency:</i> Each spray campaign	By Spray Campaign	AIRS	Completed	Completed	Completed	Completed	Completed	Completed
2.2.2 Number and percentage of soak pits and warehouses/storerooms inspected and certified by an environmental officer/AIRS Environmental Compliance Officer prior to spraying	<i>[Numerator:</i> Number of soak pits and/or storehouses inspected and certified by AIRS Environmental Compliance Office] <i>[Denominator:</i> Total number of project soak pits and/or storehouses] <i>Calculation:</i> $[Numerator \div Denominator] \times 100$	Y1, Y2, Y3	<i>Data source:</i> Project records – Reports submitted by environmental officers <i>Reporting frequency:</i> Each spray season	By Spray Campaign By soakpits and warehouses/storerooms	AIRS	135 66 Soak Pits 69 Storehouses 100% inspected and approved prior to spraying	135 66 Soak Pits 69 Storehouses 100%	135; 66 Soak Pits 69 Storehouses 100%	137; 68 Soak Pits 69 Storehouses 101.4%	137; 68 Soak Pits 69 Storehouses 100.0%	137; 68 Soak Pits 69 Storehouses 100.0%
2.2.3 Number of government environmental and health officers trained in IRS environmental compliance	Total number of government environmental and health officers trained in IRS environmental compliance using AIRS Project resources	Y1, Y2, Y3	<i>Data source:</i> Project training reports <i>Reporting frequency:</i> Semi-annually	By Spray Campaign By Gender	AIRS	30	30 M: 28 F: 2	30	36 M:33 F:3	30	40 M: 38 F:2

⁵ In Year 1, SEAs were due 30 days prior to the commencement of spraying and letter reports were to be submitted 14 days prior to the commencement of spraying. In Year 2 and Year 3, due dates agreed upon with Washington-PMI will be noted in each country-specific Monitoring and Evaluation Plan to assess indicator 2.2.1.

2.2.4 Number of spray personnel trained in environmental compliance and personal safety standards in IRS implementation	Total number of spray personnel who attend a training in environmental compliance and personal safety standards in IRS implementation using AIRS Project resources, includes all staff who received environmental compliance training - spray operators, team leaders, washpersons, storekeepers, etc.	Y1, Y2, Y3	Data source: Project records – Training reports Reporting frequency: Each spray season	By Spray Campaign By Gender	AIRS	1,007	936 M: 909 F: 27	990	1,1142 M: 982 F: 160	1,104	843 M=799 F=44
2.2.5 Number of health workers receiving insecticide poisoning case management training	Total number of clinical personnel trained in insecticide poisoning case management using AIRS Project resources	Y2, Y3	Data source: Project records – Training reports Reporting frequency: Each spray season	By Spray Campaign By Gender	AIRS	68.	61	68	70	68	53 M=48 F=5
2.2.6 Number of adverse reactions to pesticide exposure documented	Total number of incidents of pesticide exposure reported that resulted in a referral for medical care	Y1, Y2, Y3	Data source: Incident report forms that are required for each incidence of pesticide exposure Reporting frequency: Each spray season	By Spray Campaign By residential/occupational exposure	AIRS	0	0	0	0	0	0
2.2.7. Number of vehicular accidents reported	Total number of vehicular accidents reported	Y1, Y2, Y3	Data source: Vehicular incident report forms that are required for each accident Reporting frequency: Each spray season	By Spray Campaign	AIRS	0	0	0	2	0	0

2.3 Support Entomological Monitoring Activities and Insecticide Resistance Strategies											
2.3.1 Number of sentinel sites supported by the AIRS project	Total number of entomological sentinel sites supported by the AIRS project	Y1, Y2, Y3	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	AIRS	4 ⁶	4	5 ⁷	5	5	5
2.3.2 Number and percentage of entomological monitoring sentinel sites measuring all five primary PMI entomological indicators	[Numerator: Number of entomological monitoring sites measuring all five primary PMI entomological indicators] [Denominator: Number of entomological monitoring sentinel sites] Calculation: [Numerator ÷ Denominator] x 100	Y1, Y2, Y3	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	AIRS	1 out of 4; 25%	1 out of 4; 25%	2 out of 5; 40%			
2.3.3 Number and percentage of entomological monitoring sites measuring at least one secondary PMI indicator	[Numerator: Number of entomological monitoring sites measuring at least one secondary PMI indicator] [Denominator: Number of entomological monitoring sites] Calculation: [Numerator ÷ Denominator] x 100	Y1, Y2, Y3	Data source: Entomological reports Reporting frequency: Annually	By Spray Campaign	AIRS	2 out of 4; 50%	2 out of 4; 50%	4 out of 5; 80%			

⁶ Spray sites: Koulikoro, Baroueli, Bla & Non-spray sites: Kati

⁷ Spray sites: Koulikoro, Baroueli, Bla & Non-spray sites: Kati and Segou

2.3.4 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 vector control	<i>[Numerator:</i> Number of insecticide resistance testing sites that tested at least one insecticide from each of the four classes of insecticides recommended for malaria vector control.] <i>[Denominator:</i> Number of insecticide resistance testing sites] <i>Calculation:</i> [Numerator ÷ Denominator] x 100	Y1, Y2, Y3	<i>Data source:</i> Entomological reports <i>Reporting frequency:</i> Annually	By Spray Campaign By Type of Insecticide	AIRS	4; 100%	4 ⁸ ; 100%	5 ⁶ ; 100%	5 ⁶ ; 100%	5 ⁶ ; 100%	5 ⁶ ; 100%
2.3.5 Number of wall bioassays conducted within 2 weeks of spraying to evaluate the quality of IRS	Total number of wall bioassay studies conducted in established sentinel sites to evaluate quality of IRS spraying activities	Y1, Y2, Y3	<i>Data source:</i> Entomological reports <i>Reporting frequency:</i> Per spray campaign	By Spray Campaign	PMI	11 wall bioassays ⁹	11 wall bioassays ⁷	10 wall bioassays ¹⁰	10 wall bioassays ⁸	10 wall bioassays ⁸	10 wall bioassays ⁸
2.3.6 Number of wall bioassays conducted after the completion of spraying at monthly intervals to evaluate insecticide decay	Total number of wall bioassay studies conducted at monthly intervals in established sentinel sites to evaluate the rate of insecticide decay on sprayed surfaces	Y1, Y2, Y3	<i>Data source:</i> Entomological reports <i>Reporting frequency:</i> Per spray campaign	By Spray Campaign	PMI	22 11 houses tested at T1 and T2	22 11 houses tested at T1 and T2	12 6 houses tested at T1 and T2	12 6 houses tested at T1 and T2	48 wall bioassays ¹¹ Koulikoro 4 houses will be test 3 times= 12 wall biassays Baroueli	48 wall bioassays ¹² Koulikoro 4 houses was tested 3 times= 12 wall biassay

⁸ Organochlorine: DDT; Pyrethroid: Lamdacyalothrine 0,05% et Deltamethrine 0,05%; Organophosphorine: Fenitrothion 1 %; Carbamate: Bendiocarb 0,1%

⁹ 5 houses in Koulikoro, 3 houses in Baroueli, and 3 houses tested in Bla at T0

¹⁰ 4 houses in Koulikoro, 3 houses in Baroueli, and 3 houses tested in Bla at T0

¹¹ Koulikoro 4 houses will be test 3 times= 12 wall biassays; Baroueli 3 houses will be test 6 times= 18 wall biassays; Bla 3 houses will be test 6 times= 18 wall biassays

¹² Koulikoro 4 houses will be test 3 times= 12 wall biassays; Baroueli 3 houses will be test 6 times= 18 wall biassays; Bla 3 houses will be test 6 times= 18 wall biassays

										3 houses will be test 6 times= 18 wall biassays	s Barouel i 3 houses was tested
2.3.7 Number of vector susceptibility tests for different insecticides conducted in selected sentinel sites	Total number of vector susceptibility tests conducted to gauge the effectiveness of individual insecticides proposed for use in spray operations	Y1, Y2, Y3	<i>Data source:</i> Entomological reports <i>Reporting frequency:</i> Per spray campaign	By Spray Campaign By Type of Insecticide	PMI	13	13 ¹³	10 ⁵	10	12	12
2.4 Conduct Communications Activities and Community Mobilization											
2.4.1 Number of radio spots and talk shows aired	Total number of radio spots and talk shows aired in target spray districts to stress the safety and benefits of IRS, ensure successful spray coverage, timely vacating of premises and adherence to IRS safety precautions by community members	Y1, Y2, Y3	<i>Data source:</i> Project records ex: payment receipts <i>Reporting frequency:</i> Semi-annually	By Spray Campaign	AIRS	N.A.	65	1,274	5,035	5,035	5,035
2.4.2 Number of IRS print materials disseminated	Total number of IRS educational materials developed, printed and	Y1, Y2, Y3	<i>Data source:</i> Project records	By Spray Campaign	AIRS	340,000	65,000	150,000	32,565	32,565	50,000

¹³ Organochlorine: DDT; Pyrethroid: Lamdacyalothrine 0,05% et Deltamethrine 0,05%; Organophosphorine: Fenitrothion 1 %; Carbamate: Bendiocarb 0,1%

	distributed to community members in target spray districts using AIRS Project resources		<i>Reporting frequency:</i> Semi-annually	By Type of printed material and message(s)								
2.4.3	Number of people reached with IRS messages via door-to-door mobilization	Total number of adults reached with IRS message during pre-spray community, door-to-door mobilization	Y1, Y2, Y3	<i>Data source:</i> Mobilization Data Collection Forms <i>Reporting frequency:</i> Daily per mobilization conducted	By Spray Campaign By Gender	AIRS	290,265	228,991 M: 103,129 F: 125,862	308,097	351,830 M: 171,553 F: 180,277	N.A. ¹⁴	N.A.

¹⁴ In 2014, AIRS Mali will only be completing mass mobilization

2.5 Spray Targeted Structures According to Technical Specifications											
2.5.1 Number of structures targeted for spraying ¹⁵	Total number of structures found in targeted spray districts by Spray Operators	Y1, Y2, Y3	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign	PMI	215,000	210,217	210,217	233,789	233,789	233,706
2.5.2 Number of structures sprayed with IRS ¹⁶	Total number of structures sprayed in targeted districts	Y1, Y2, Y3	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign	PMI	182,750	206,295	206,295	228,985	198,721	228,123
2.5.3 Percentage of total structures targeted for spraying that were sprayed with a residual insecticide (Spray Coverage)	[Numerator: Total number of structures sprayed in targeted districts] [Denominator: Total number of structures in targeted areas found by spray operators] Calculation: [Numerator ÷ Denominator] x 100	Y1, Y2, Y3	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign	PMI	85%	98%	85%	97,95%	85%	97.61%
2.5.4 Number of people residing in structures sprayed (Number of people protected by IRS)	Total number of people residing in structures sprayed (Actual numbers are collected during spray operations; population estimates are not used.)	Y1, Y2, Y3	Data source: Daily Spray Operator Forms Reporting frequency: Daily per spray campaign	By Spray Campaign By Number of pregnant women By Number of children <5 years old	PMI	697,512	762,146 ¹⁷	762,146 ¹⁸	850,104 ¹⁹	850,104	836,568 22,352 154,764

15 The yearly targets for this indicator are from the applicable work plan. The yearly results are the number of structures found by Spray Operators during the spray campaign.

16 The target per year for this indicator is based on 85% of the number of structures to be targeted as noted in the applicable workplan.

17 Number of Pregnant women: 18,561 and Number of Children less than 5 years old: 145,953

18 Number of Pregnant women: 18,561 and Number of Children less than 5 years old: 145,953

19 Number of Children less than 5 years old = 153,962 Number of Pregnant women = 22,405

Component 3: Provide ongoing monitoring and evaluation and quality control measures

3.1 Submit Monitoring and Evaluation Plan (MEP) to PMI- Mali	<i>Milestone:</i> (Completed/Not Completed)	Y1, Y2, Y3	<i>Data source:</i> Project records <i>Reporting frequency:</i> Semi-annual		AIRS	Completed	Completed	Completed	Completed	Completed	Completed
3.2 Submit a post-spray data quality audit (PSDQA) report to the AIRS M&E specialist in the home office within 60-180 days of completion of spray operations	<i>Milestone:</i> (Completed/Not Completed)	Y1, Y2, Y3	<i>Data source:</i> Spray operations reports <i>Reporting frequency:</i> Per spray campaign	By Spray Campaign	AIRS	Completed	Completed	N.A.	N.A.	Completed	Completed
3.3 Submit a country-specific Eligible Structure Definition Document to local PMI advisors and NMCP	<i>Milestone:</i> (Completed/Not Completed)	Y1	<i>Data source:</i> Project records <i>Reporting frequency:</i> Semi-annually		AIRS	Completed	Completed	N.A.	N.A.	N.A.	N.A.

3.4 Supply chain review conducted by RTT	Milestone: (Completed/Not Completed)	Y1, Y2	Data source: RTT supply chain review reports Reporting frequency: Semi-annually	By Spray Campaign	AIRS	Completed	Completed	Completed	Completed	N/A	N/A
Component 4: Contribute to Global IRS Policy-Setting and Country-Level Policy Development of Evidence-Based IRS; Disseminate Experiences and Best Practices											
4.1 Number of guidelines/checklists/tools related to IRS operations developed or refined with project support	Total number of implementation guidelines, process checklists and program tools related to IRS operations developed or refined using the technical and/or financial resources of the AIRS Project	Y1, Y2, Y3	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By Guideline/c hecklist/tool	AIRS	6	6	6	6	6	6
4.2 Number of articles/best practices documents published	Total number of articles or other best-practice documents that have been published in relevant journals or through PMI/USAID communications vehicles	Y2, Y3	Data source: EOSPR Reporting frequency: Semi-annually	By Spray Campaign By IRS Technical Area	AIRS	N.A.	N.A.	TBD	2	2	2
4.3 Number of best practice presentations given at national/regional/international workshops and conferences	Total number of project-related oral and poster presentations delivered in national, regional and/or international meetings related to IRS.	Y2, Y3	Data source: Project records – Activity reports Reporting frequency: Semi-annually	By IRS Technical Area	AIRS	N.A.	1	1	1	1	1

Component 5 (Cross-cutting): Capacity Building, Knowledge Transfer, Gender Inclusion

5.1 Capacity Building (Gender Inclusion)

5.1.1 Number of people trained in IRS implementation	Total number of personnel trained in IRS implementation using AIRS Project resources. This figure only includes spray personnel such as spray operators, team leaders, supervisors, clinicians; it excludes data clerks, IEC mobilizers, drivers, washers, porters, pump technicians, security guards, etc.	Y1, Y2, Y3	<i>Data source:</i> Project records – Training reports <i>Reporting frequency:</i> Semi-annually	By Spray Campaign By Gender Percentage of Women Trained	PMI	846	872 M: 837 F: 35 4%	876	853 <i>Males:</i> 819 <i>Female:</i> 34	853	911 M=865 F=46
5.1.2 Number of people trained to deliver or support IRS in target districts ²⁰	Total number of people trained using AIRS Project resources to implement/support elements of IRS in target districts. This figure includes all cadre that serve a role in IRS.	Y1, Y2, Y3	<i>Data source:</i> Project records – Training reports <i>Reporting frequency:</i> Semi-annually	By Spray Campaign By Gender By Role (e.g., spray operator, storekeeper) Percentage of women trained	AIRS	2,417	2371 M: 2068 F: 303 1%	2,403	2426 <i>M: 2017</i> <i>F: 409</i> 16.9%	2074	2066 M=1793 F=273 13%
5.1.3 Number of personnel trained as IRS implementation trainers	Total number of personnel trained in Training of Trainers (TOT) for IRS delivery	Y1, Y2, Y3	<i>Data source:</i> Project records – Training reports <i>Reporting frequency:</i> Semi-annually	By Spray Campaign By Gender Percentage of women trained	AIRS	30	33 M: 31 F: 2	30	37. Male 34; Female 3	30	43 M=41 F= 2

²⁰ See Annex B for the breakdowns of the training targets as presented in the 2012 and 2013 AIRS Workplan, and 2012 End of Spray Report

5.1.4 Number of government environmental and/or health officials trained in IRS oversight	Total number of national and sub-national/district government environmental and/or health officials who are trained in oversight of IRS implementation using AIRS Project Mali resourc	Y1, Y2, Y3	Data source: Project records – Training reports Reporting frequency: Semi-annually	By Spray Campaign By Gender Percentage of Women Trained Type of government official (e.g. environmental/health)	AIRS	N.A.	N.A.	12	36 M: 33 F: 3 9%	30	40
5.1.5 AIRS conducted a capacity assessment	AIRS program conducted an assessment of IRS capacity among national and sub-national/district government health officials	Y1, Y2	Data source: Project records – Capacity assessment reports Reporting frequency: Semi-annually		AIRS	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
5.1.6 Number of capacity-building MOUs signed by AIRS, NMCP and partners/ institutions	Total number of Memoranda of Understanding (MOU) on provision of local capacity building finalized and signed between AIRS, the National Malaria Control Program, and other local partners and institutions	Y1, Y2, Y3	Data source: Project records – MOUs Reporting frequency: Semi-annually	By Spray Campaign	AIRS	N.A.	N.A.	N.A.	N.A.	TBD	TBD