



U.S. PRESIDENT'S MALARIA INITIATIVE



THE PMI VECTORLINK BURKINA FASO 2021 END OF SPRAY REPORT (EOSR)

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**THE PMI VECTORLINK
BURKINA FASO 2021 END OF SPRAY
REPORT**



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I. ACRONYMS

BMP	Best Management Practices
COP	Chief of Party
COVID-19	Coronavirus Disease 2019
CSPS	Center for Health and Social Promotion (Centre de Santé et Promotion Sociale)
DCV	Data Collection Verification
DHMT	District Health Management Team
DRS	Regional Health Directorate (Direction Régionale de la Santé)
ECO	Environmental Compliance Officer
ICP	Health Post Nurse (Infirmier Chef de Poste)
IEC	Information, Education, and Communication
IRS	Indoor Residual Spraying
IRSS	Institute of Research on Health Sciences (Institut de Recherches en Sciences de la Santé)
ITN	Insecticide Treated Nets
M&E	Monitoring and Evaluation
MOH	Ministry of Health
NMCP	National Malaria Control Program
PMI	President's Malaria Initiative
PPE	Personal Protective Equipment
PSECA	Pre-Season Environmental Compliance Assessment
SAPHYTO	African Company of Phytosanitary Products and Insecticides (Société Africaine de Produits Phytosanitaires et d'Insecticides)
SEA	Supplemental Environmental Assessment
USAID	United States Agency for International Development
WHO	World Health Organization

2. EXECUTIVE SUMMARY

One key objective of the U.S. President's Malaria Initiative (PMI) VectorLink Project is to limit exposure to malaria vectors and reduce the incidence and prevalence of malaria through indoor residual spraying (IRS). In 2021, the PMI VectorLink Burkina Faso project conducted spray operations from May 10 to June 19, 2021 (Solenzo: May 10 to June 4; Kampti: May 20 to June 19) with a spray target of 171,276 structures and a goal of protecting 536,983 people in the following districts in Burkina Faso: Kampti (South-West Region) and Solenzo (Boucle de Mouhoun Region). The project used three types of insecticides in 2021 in the two health districts: Sumishield 50 WG and Fludora® Fusion in Solenzo, and Actellic 300CS in Kampti.

The followings are project achievements and key highlights of the Burkina Faso's 2021 spray campaign:

- The project sprayed a total of 175,523 structures out of 189,425 eligible structures found by spray operators (SOPs) and achieved the 171,276 targeted structures in the two IRS districts, accounting for a final spray coverage rate of 92.7 percent and a spray progress rate of 102.5 percent.
- The project protected 586,249 people (out of the targeted population of 536,983 people) from the burden of malaria in 2021, including 120,019 (20.5 percent) children under five years old and 31,218 (5.3 percent) pregnant women.
- A total of 1,823 people were trained, of whom 348 (19 percent) were women. Out of the total number of people trained, there were 834 spray operators (SOPs), of whom 151 (18.1 percent) were women.
- A total of 10,581 sachets of SumiShield 50 WG and 21,075 sachets of Fludora® Fusion were used in the district of Solenzo and 6,421 bottles of primiphos-methyl (Actellic 300CS) in Kampti. The utilization ratios were 4.6 structures per unit of insecticide: 4.5 structures per unit of SumiShield or Fludora® Fusion sachet in Solenzo, 5.1 structures per unit of Actellic 300CS in Kampti. The remaining insecticide quantity at the end of the 2021 spray campaign is zero sachet of SumiShield 50 WG and Fludora® Fusion, and 1,067 bottles of Actellic 300 CS set to expire in February 2023.
- During the first two weeks of the campaign, the project conducted cone bioassays to assess the quality of the spray. The results indicated 100 percent mortality for the three brands of insecticides sprayed (SumiShield 50 WG, Fludora® Fusion WP-SB and Actellic 300CS).
- Insecticide susceptibility testing in 2020 of wild *An. gambiae* s.l. showed full susceptibility to pirimiphos-methyl (active ingredient in Actellic CS) and clothianidin (active ingredient in SumiShield WG and Fludora Fusion WP-SB) in Solenzo and Kampti. Based on susceptibility results, all three formulations were selected to be used for IRS as part of a rotation strategy.
- VectorLink Burkina Faso continued to use the VectorLink Collect database (DHIS2) to monitor the spray progress electronically on a daily basis.
- The PMI VectorLink Burkina Faso team strengthened Information, Education, Communication (IEC) messaging during the campaign in collaboration with local radio stations and organized advocacy meetings in the two districts with traditional leaders and local authorities prior to the spray campaign to minimize refusal rates.
- The project incinerated all insecticide-contaminated wastes, including used masks and empty sachets of SumiShield 50 WG and Fludora® Fusion, and recycled empty bottles of Actellic 300 CS at the African Company of Phytosanitary Products and Insecticides (Société Africaine de Produits Phytosanitaires et d'Insecticides: SAPHYTO). Certificates of incineration and decontamination were issued to the project by SAPHYTO.

Table 1: VectorLink Burkina Faso 2021 IRS Campaign Summary

	Kampti	Solenzo	Total
Insecticide used	Actellic 300 CS: 6,421	SumiShield: 10,581 Fludora Fusion: 21,075	38,077
Total targeted structures	32,347	138,929	171,276
Cumulative structures found by SOPs	34,965	154,460	189,425
Cumulative structures sprayed	32,808	142,715	175,523
Population in sprayed structures	111,522	474,727	586,249
Population of pregnant women in sprayed structures	4,239	26,979	31,218
Population of children under five in sprayed structures	22,534	97,485	120,019
Spray progress (%) (based on targeted structures)	101.4	102.7	102.5
Spray coverage (%) (based on structures found by SOPs)	93.8	92.4	92.7
Total number of people trained to deliver IRS in targeted areas	448	1,350	1,798
Female	90	253	343
Male	358	1,097	1,455

3. COUNTRY BACKGROUND & ACTIVITY SUMMARY

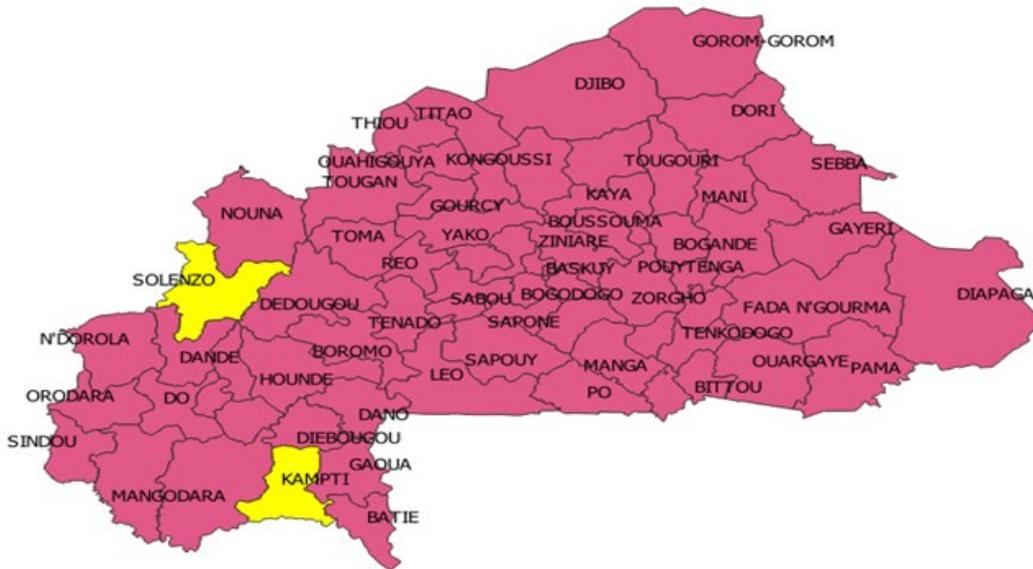
In Burkina Faso, PMI supported indoor residual spraying (IRS) in one district (Diebougou) from 2010 to 2012, in three districts (Kampti, Solenzo and Kongoussi) from 2018 to 2019, and in two districts (Kampti and Solenzo) from 2020 to 2021.

Table 2: PMI Supported IRS in Burkina Faso: 2012-2021

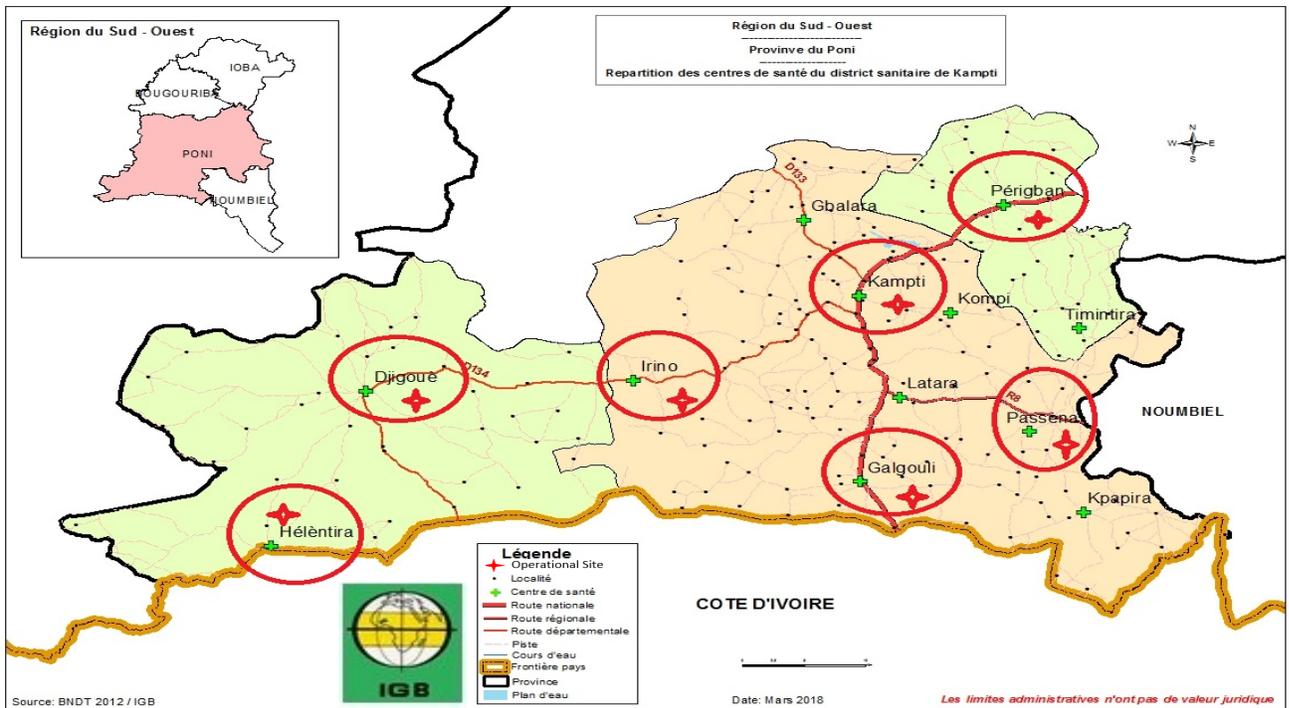
Year	Geographic Area	IRS Strategy	Insecticide	Number of Structures Sprayed	Population Protected
2010	Diebougou	Blanket	Bendiocarb (Carbamate)	33,897	118,691
2011	Diebougou	Blanket	Bendiocarb (Carbamate)	33,832	110,064
2012	Diebougou	Blanket	Bendiocarb (Carbamate)	37,167	116,138
2018	Kampti Kongoussi Solenzo	Blanket	SumiShield (Clothianidin) Actellic® 300 CS (Organophosphate)	258,766	766,374
2019	Kampti Kongoussi Solenzo	Blanket	Fludora Fusion (Clothianidin and Deltamethrin combination) Actellic® 300 CS (Organophosphate) SumiShield (Clothianidin)	201,901	587,248
2020	Kampti Solenzo district	Blanket	Fludora Fusion (Clothianidin and Deltamethrin combination) SumiShield (Clothianidin)	162,037	508,017
2021	Kampti Solenzo	Blanket	Fludora Fusion (Clothianidin and Deltamethrin combination) SumiShield (Clothianidin) Actellic® 300 CS (Organophosphate)	175,523	586,249

In 2021, the VectorLink Burkina Faso project implemented the IRS campaign in close collaboration with PMI, National Malaria Control Program (NMCP), Ministry of Health (MOH), Ministry of Environment, National Bureau of Environmental Assessment/Bureau National des Evaluations Environnementales (BUNEE), Regional Directorate of Health/Direction Régionale de la Santé (DRS), Provincial and Departmental Environmental Services, and District Health Management Teams (DHMTs), in the two targeted districts.

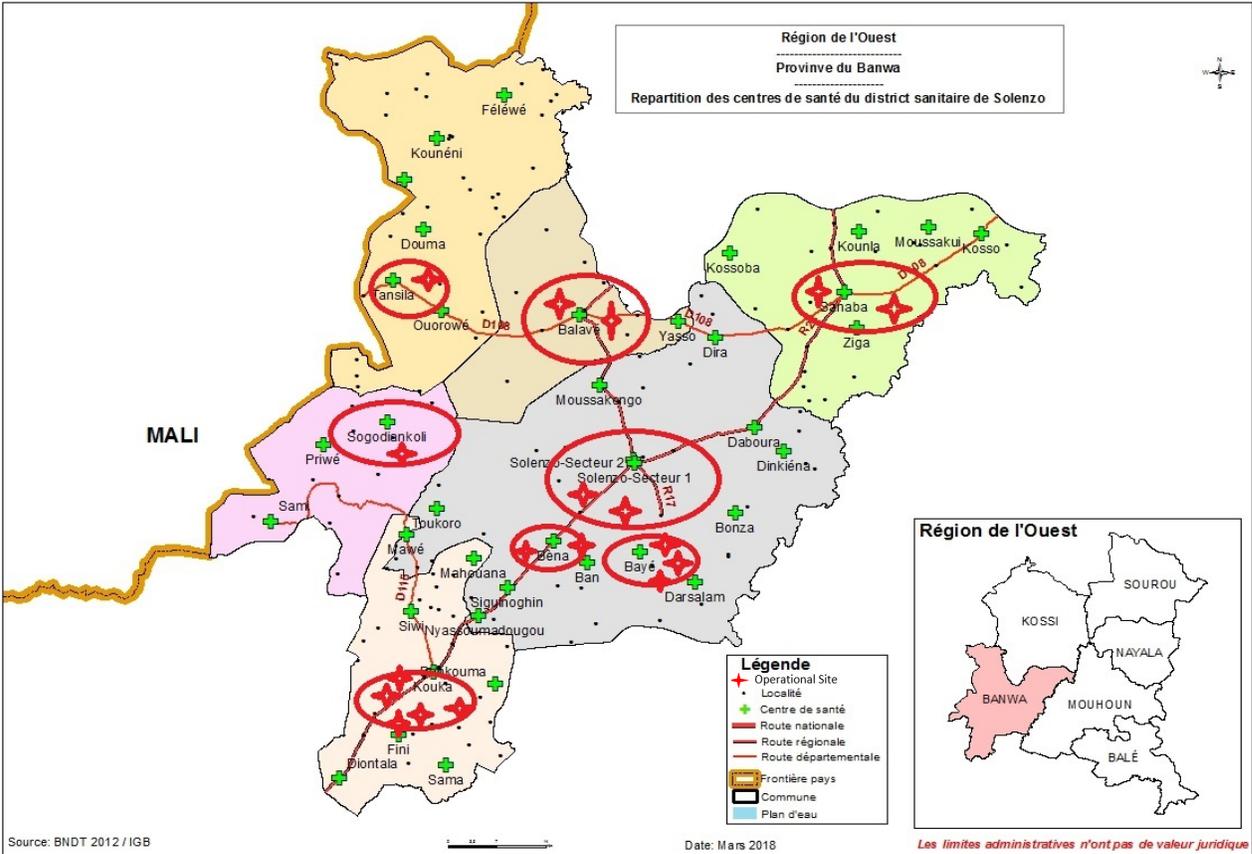
Figure 1: PMI VectorLink Burkina Faso 2021 IRS Districts and operational sites in Kampti and Solenzo



KAMPTI



SOLENZO



4. IMPLEMENTATION OF IRS ACTIVITIES

4.1. IRS PLANNING AND PARTNERS' COLLABORATION

The VectorLink Burkina Faso Project met regularly with PMI Burkina, National Malaria Control Program (NMCP), Direction Régionale de la Santé / Regional Directorate of Health (DRS) and District Health Management Team (DHMT) in 2021 to discuss the planning and implementation of the IRS campaign. The project and the NMCP conducted the National Planning Meeting (March 18, 2021) and the training for core trainers /Master training (March 31 to April 2). The micro-planning workshop took place in the two districts (April 8, 2021) with all relevant stakeholders to adopt the final plans for completing the 2021 IRS campaign. The project implemented the IRS campaign in 2021 from May 10 to June 19 (20 operational days) in two districts: Kampti (May 20 – June 19) and Solenzo (May 10 – June 4). The project managed spray operations out of 25 operational sites (seven in Kampti and eighteen in Solenzo). Each operational site had a warehouse to store spray materials as well as a permanent soak pit to accommodate the spray teams during the end-of-day clean-up. The NMCP, in collaboration with VectorLink, led supervisory activities for IRS operations in both districts as part of its national IRS leadership and capacity building management. Table 3 below shows the location of operations sites and status of warehouses.

To mitigate COVID-19 risks during the 2021 IRS campaign, the project, in collaboration with NMCP, used the contingency plan developed in 2020 related to IRS implementation in the context of COVID-19 pandemic. The contingency plan outlined detailed mitigation measures that would ensure the safe implementation of spray activities for all spray personnel and beneficiaries.

Table 3: Location and Names of Operations Sites

	Districts	Operations Sites	Type of Facility (Health Center, Private Building, etc.)
Kampti		Kampti	Facility provided free of charge by the Center for Health and Social Prevention / Centre de Santé et Promotion Sociale (CSPS).
		Passena (Kpapira)	Private building provided free of charge from the community.
		Helintira	Private building provided free of charge from the community.
		Irinao	Facility provided free of charge by the health center (CSPS).
		Djigouè	Private building provided free of charge from the community.
		Perigban	Facility provided free of charge by the health center (CSPS).
		Galgouli (Latara)	Private building provided free of charge by the community.
Solenzo		Balave 1	Facility provided free of charge by the health center (CSPS).
		Balave 2	Facility provided free of charge by the health center (CSPS).
		Kouka 1	Facility provided free of charge from the community.
		Kouka 2	Facility provided free of charge from the community.
		Kouka 3	Facility provided free of charge from the community.
		Kouka 4	Facility provided free of charge from the community.
		Sogodjankoli	Facility provided free of charge by the health center (CSPS).
		Sanaba (Founa) 1	Facility provided free of charge by the health center (CSPS).
		Sanaba (Founa) 2	Facility provided free of charge by the health center (CSPS).

Districts	Operations Sites	Type of Facility (Health Center, Private Building, etc.)
	Baye 1	Facility provided free of charge from the community.
	Baye 2	Facility provided free of charge from the community.
	Baye 3	Facility provided free of charge from the community.
	Bena (Siguinonghin) 1	Facility provided free of charge from the community.
	Bena (Siguinonghin) 2	Facility provided free of charge from the community.
	Bena (Siguinonghin) 3	Facility provided free of charge from the community.
	Solenzo (Moussakongo) 1	Private building provided free of charge by the community.
	Solenzo (Moussakongo) 2	Private building provided free of charge by the community.
	Tansila	Facility provided free of charge by the health center (CSPS).

The project rented motorcycle tricycles to transport the spray teams to and from the operational sites to the spray sites. The project also used vehicles for supervision related purposes and to transport spray equipment and insecticide. To comply with the social distancing requirement, a six-seater tricycle carried four SOPs per trip.

4.2. TRAINING

The VectorLink Burkina Faso project, in collaboration with the MOH /NMCP, updated the standard training curriculum, training job aids and participants' handbooks to account for COVID-19 prevention practices. The project shared final training materials among staff and national facilitators, who later facilitated their respective training sessions. The key topics covered during the trainings included the following: IRS concepts and planning, environmental compliance and personal safety, monitoring and evaluation of IRS, gender awareness, social behavior change concepts, communication and information transfer techniques, management of operational sites, insecticide and equipment handling, spray techniques and proper use of personal protective equipment (PPE), logistics, and warehouse management. An emphasis was placed on site managers and other supervisors (NMCP, regional and district health management teams, infirmiers chefs de poste (ICPs) / health post nurses) training with the use of GPS-equipped smartphones for IRS data collection. Training sessions were conducted by VectorLink Burkina Faso staff and government counterparts, including staff from NMCP, DRS and DHMT.

Table 4 below provides details of the types of trainings covered.

Table 4: Number of Training Sessions and People Trained, Disaggregated by Job Title, Spray District and Gender.

Training	Kampti		Solenzo		Total		
	Male	Female	Male	Female	Male	Female	Total
Mobilizers	171	15	227	52	398	67	465
Team Leaders	16	7	88	13	104	20	124
Site Managers /Site Supervisors	8	0	18	1	26	1	27
Supervisors (Head of Health Centers)	6	2	37	2	43	4	47
Supervisors Community mobilizers (health Post Nurses/Infirmiers Chef de Poste)	6	2	25	0	31	2	33
Spray Operators	98	38	585	113	683	151	834
Spray Pump Technicians	6	1	27	0	33	1	34
Washers	0	17	0	67	0	84	84
Storekeepers	6	1	15	3	21	4	25

Training	Kampti		Solenzo		Total		
	Male	Female	Male	Female	Male	Female	Total
Drivers	3	0	2	0	5	0	5
Guards	21	0	28	0	49	0	49
Logistics Assistants (2), Finance Assistants (2), Monitoring and Evaluation Assistants (2)	2	1	3	0	5	1	6
Training of Trainers (TOT) District	15	6	42	2	57	8	65
TOT National					20	5	25
Total	358	90	1,097	253	1,475	348	1,823
Percentage of Women	20.1%		18.7%		19.1%		

Figure 2: Trainings



Use of Mobile Soap Pit Training in Tansila Site (Solenzo)



Insecticide Mixing in Solenzo

4.3. SPRAY OPERATIONS & SUPERVISION

Number of Eligible Structures Found and Spray Coverage

During the 2021 IRS campaign, the project found a total of 189,425 structures (34,965 in Kampti and 154,460 in Solenzo). The project sprayed 175,523 structures (32,808 in the Kampti and 142,715 in Solenzo) out of 189,425 structures found. The overall coverage rate achieved for both districts was 92.7 percent.

4.3.1. CADRE OF PEOPLE HIRED TO SUPPORT THE 2021 IRS CAMPAIGN

The PMI VectorLink Burkina Faso project hired 1,628 seasonal workers (388 seasonal workers in Kampti including 317 men and 71 women; 1,240 seasonal workers in Solenzo, including 991 men and 249 women). All recruitments were made in collaboration with the MoH / NMCP and local health authorities (DHMT and Health Post Nurses). Table 5 provides details on the seasonal workers recruited.

Table 5: Seasonal Workers Hired for the Spray Districts

Seasonal Staff Category	Kampti		Solenzo		Total		
	Male	Female	Male	Female	Male	Female	Total
Team Leaders	16	7	88	13	104	20	124
Spray Operators	87	29	585	113	672	142	814
Spray Pump Technicians	6	1	27	0	33	1	34
Washers	0	17	0	67	0	84	84
Mobilizers	171	15	227	52	398	67	465
District Coordinators	1	0	1	0	2	0	2
Site Supervisors/Managers	7	0	17	1	24	1	25
Storekeepers	6	1	15	3	21	4	25
Guards	21	0	28	0	49	0	49
Assistants: Finance Assistants, Logistics Assistants, Monitoring & Evaluation Assistants	2	1	3	0	5	1	6
Total	317	71	991	249	1,308	320	1,628
Percentage of Women	18.29%		20.08%		19.65%		

4.3.2. KEY OPERATIONAL DETAILS

Operational Management

Each morning during the spray campaign, breakfast was served to SOPs, team leaders (TLs), spray pump technicians and site managers before they were deployed to the field to conduct spray operations. Right after the teams were served breakfast, a morning mobilization meeting took place, where the spray teams were brought together, while respecting the necessary social distance amid the coronavirus disease (COVID-19) pandemic, for important information-sharing (i.e. performance related aspects, recommendations, etc.). Handwashing facilities were also installed at all operations sites for spray workers to practice regular handwashing to limit the risk of disease transmission and insecticide contamination.

At the end of each day, the SOPs handed their tablets used for mobile data collection to their team leaders who verified the completed forms (for completeness and accuracy) and compiled the daily data before submitting them to their site coordinators. After data verification, site managers proceeded with the synchronization process to the VectorLink Collect database server. Tablets were also cleaned with chlorinated solution at the end of each day to minimize the risk of disease transmission during the COVID-19 pandemic. Table 6 below shows the number of spray teams recruited during the 2021 IRS campaign.

Table 6: Number of Spray Teams Recruited during the 2021 IRS Campaign

Districts	Operational Sites	Number of SOPs	Number of Team Leaders	Number of Site Supervisors	Numbers of Mobilizers	Total
Kampti	Kampti	30	6	1	53	90
	Passena (Kpapira)	14	3	1	33	51
	Helintira	18	4	1	7	30
	Irinao	7	2	1	13	23
	Djigoué	22	4	1	20	47
	Pergban	8	2	1	21	32
	Galgouli (Latara)	16	3	1	33	53
Solenzo	Balave1	21	4	1	17	43
	Balave2	22	5	1	12	40
	Baye1	39	8	1	22	70
	Baye2	24	5	1	4	34
	Baye3	20	4	1	8	33
	Bena1	31	6	1	13	51
	Bena2	39	8	1	19	67
	Bena3	20	4	1	16	41
	Kouka1	24	5	1	13	43
	Kouka2	28	5	1	7	41
	Kouka3	23	5	1	14	43
	Kouka4	29	6	1	18	54
	Sanaba (Founa)1	30	6	1	29	66
	Sanaba (Founa)2	28	6	1	23	58
	Solenzo (Moussakongo) 1	30	6	1	25	62
	Solenzo (Moussakongo) 2	30	6	1	14	51
	Sogodjankoli	20	4	1	22	47
Tansila	38	8	1	34	81	
Total		611	125	25	490	1,251

Mobile Payment

Seasonal workers hired for the 2021 spray campaign were paid through the mobile payment system (Orange Money). The mobile payment system has proven to be very effective as it allowed the project to make payments remotely in a timely, cost efficient and secure manner. In terms of cost efficiency, the project paid a small transfer fee per transaction and did not have to incur the additional expenses (per diems, fuel, car rental costs, security forces presence, etc.) associated with in-person payments by the project staff. In addition, the project implemented the electronic timesheet system for seasonal workers, which served to record signed daily attendance via smartphone of each worker. This new system allowed the project's finance team to have

access on a daily basis to the number of people who worked and subsequently plan payments in a timely manner.

4.4. INSECTICIDE

The project had 15 sachets of Fludora Fusion (set to expire in February 2022) and 621 sachets of SumiShield (set to expire in December 2022) leftover from the 2020 spray campaign. The project procured for the 2021 IRS campaign, a total of 38,508 sachets/bottles of insecticides (9,960 SumiShield, 21,060 sachets of Fludora® Fusion and 7,488 bottles of Actellic 300CS) to spray the targeted districts. The project used 38,077 sachets/bottles of insecticides including 21,075 sachets of Fludora® Fusion and 10,581 sachets of SumiShield in Solenzo and 6,421 bottles of Actellic 300 CS in Kampti. One unit of Fludora Fusion / SumiShield insecticide sprayed approximately 4.5 structures in Solenzo, while a bottle of Actellic 300 CS sprayed 5.1 structures in Kampti. At the end of the spray campaign, the project had zero sachet of both Fludora® Fusion and SumiShield and 1,067 of Actellic 300CS set to expire in February 2023.

Table 7: Number of Structures Sprayed and Quantity of Insecticide Used per District, Burkina Faso IRS Campaign, 2021

Region	District	No. of Structures Sprayed	No. of Insecticide Sachets Used	Average Number of Structures Sprayed per Sachet of Insecticide	Insecticide Type
South-West	Kampti	32,808	6,421	5.1	Actellic 300 CS
Boucle du Mouhoun	Solenzo	142,715	31,656	4.5	SumiShield and Fludora Fusion
Total		175,523	38,077	4.6	

4.5. IEC / SBC ACTIVITIES & OUTCOMES

PMI VectorLink Burkina Faso, in collaboration with the Burkina Faso NMCP and other stakeholders, supported a range of Information, Education, Social and Behavior Change (IEC/SBC) activities to ensure full support to IRS activities and to promote acceptance of this intervention by the community. The project updated existing IEC materials to suit the 2021 IRS campaign needs. IEC materials and tools that the project updated / developed included: training manual and PowerPoint presentations, IRS posters, pictograms, T-shirts and banners, for awareness against theft of IRS commodities and data falsification by SOPs, as well as partner radio contracts. The project conducted a one-day workshop to amend and validate the communication plan and strategy to be used throughout the campaign.

The project, in collaboration with NMCP, developed a communication plan using the same strategies as in 2020. The project used public town criers and recruited additional community members to support household preparation. IEC/SBC activities focused on positive benefits of IRS in preventing and controlling malaria, on addressing common prevalent myths, and misconceptions about IRS that could impede IRS acceptance and project's performance. In order to safely implement the IRS campaign amid the COVID-19 pandemic, seasonal workers were required to comply with prevention measures (safe distance, handwashing, and PPE at all times) put in place at the operational site and community level.

The project team worked with media channels to broadcast radio spots and inform communities of the IRS campaign schedule and its benefits for malaria prevention and control. In addition, messages on IRS from the High Commissioner of both provinces were broadcasted on a daily basis during the entire course of the campaign. Interactive radio-talks were also organized with community members with questions and answers on IRS.

Figure 3: Radio Talk Show in Solenzo and NMCP Coordinator Mobilizing SOPs in Kampti



Morning Mobilization with NMCP Director in Kampt



Morning Mobilization with NMCP Director in Kampt

Table 8: Summary of People Reached through Mobilization

District	Mobilizers/Town Criers	Radio Broadcasts	Religious Places	Others (Television, Health Centers, etc.)	Grand Total
Kampti	29,886	81	184	106	30,257
Solenzo	125,982	2,289	3,086	1,659	133,016
Total	155,868	2,370	3,270	1,765	163,273

Advocacy Meetings

In collaboration with NMCP and partners, VectorLink Burkina Faso conducted advocacy meetings in each district on April 7, 2021. These meetings involved administrative, political and health authorities, as well as community leaders. During these advocacy meetings, the project also presented to administrative and health authorities, the contingency plan that was put in place to safely implement IRS activities in the context of COVID-19.

Community Mobilization

In 2021, the project, in collaboration with the DHMT, identified and recruited community mobilizers to work directly at the community level to address factors preventing or supporting IRS acceptability, and promote malaria-related behaviors.

Town Criers

As in previous years, the project used town criers. When the spray was not conducted in a village in one day for any reason, including weather, rituals or funerals, the scattering of households in the village, etc., the town criers, in collaboration with the village leaders and supervisors, informed household owners of date changes.

Mass Media Communication

Two provincial radio stations were contracted to cover the IRS campaign. Activities included the broadcast of messages in French and in local languages covering the following:

- Dissemination of IRS operations schedules in each location
- Talk shows, roundtables and interactive sessions with questions and answers
- Dissemination of High Commissioners' messages, etc.

Table 9: IEC Activities Conducted by Radio Stations

Activities	Number of Broadcasts
Disseminating radio spots and messages on IRS in French and five national languages (More, Dioula, Lobiri, Fulfulde, Birifor)	60
IRS schedule announcements/invitations for local leaders to attend IRS planning meetings (French and national languages)	53
Debates and interactive discussion shows	2
Interviews and testimonials of beneficiaries	14

IEC / SBC outcomes

With IEC / SBC strategies deployed during the 2021 IRS campaign, the project experienced an improvement in IRS acceptance at the household level with 3,404 non-sprayed structures in 2021 compared to 3,741 non-sprayed structures in 2020 associated with refusals. For instance, the team experienced less refusals in Kampti due to enhanced mobilization efforts in close collaboration with the district health team who used close-proximity communication strategies to engage communities into IRS acceptance. The average rate of refusals represented 1.8 percent of all non-sprayed structures. Table 10 shows the proportion of refusal cases.

Table 10: Proportion of Refusal Cases among Untreated Structures

Districts	Structures Found	Non-Sprayed	Structures Not Sprayed due to Refusals	
	#	Structures #	#	%
Kampti	34,965	2,157	1,223	3.5%
Solenzo	154,460	11,745	2,181	1.4%
Total	189,425	13,902	3,404	1.8%

In the context of Covid-19, the project, in collaboration with NMCP, organized a short launch ceremony in each of the two districts. The ceremonies were chaired by the highest administrative and provincial authorities, the Representative of the General Director of Public Health, and the MNCP Coordinator.

Figure 4: Mini-Spray Campaign Launch Ceremony

IRS Launch in Kampti



IRS Launch in Solenzo;

National Capacity Building and Collaboration Efforts

During the 2021 IRS campaign, VectorLink Burkina Faso continued to promote the transfer of technical capacity to the National Government to enable the country to assume greater responsibility in planning, implementing, and monitoring IRS activities. The project worked in coordination with NMCP/MOH staff at the national, regional and district level to implement program activities, including environmental compliance, community mobilization, training, logistics management, supervision, and coordination of IRS field operations.

As part of a hands-on approach to capacity building, NMCP, DRS, DHMT and provincial environmental officers were fully involved in the supervision of IRS activities in the two districts.

At the regional and district level, capacity building included the following areas:

- Micro-planning for IRS activities
- Training of personnel to conduct IRS activities
- Recruitment of spray personnel
- Supervision of spray activities using smartphones
- Community mobilization for IRS operations and community meetings and dialogues

4.6. GENDER MAINSTREAMING

In the context of the IRS campaign, PMI VectorLink Burkina Faso's strategies for gender mainstreaming included:

- A high-level advocacy meeting with political and administrative authorities, as well as opinion leaders to discuss the different barriers observed in the intervention areas, including those that prevented women from fully participating in all components of the IRS implementation. The objective of this meeting was to sensitize these stakeholders on the importance of increasing female participation in IRS campaigns.
- VectorLink Burkina Faso has incorporated gender awareness and sexual harassment training in all the trainings conducted prior to the campaign. Participants learned about the importance of gender equity and equality for the success of the spray campaign, and for women's empowerment in society.
- Ensuring women have accommodations in operational sites where they feel safe and comfortable, including separate restrooms for male and female workers, properly labeled and well separated for privacy.
- Ensuring that every woman received the appropriate size for coveralls and boots.
- Creating a buddy system so that at least two women are together on each spray team.
- Continuing to promote a respectful working environment through the project's sexual harassment policy for all employees, including seasonal workers.
- Providing disposable and reusable sanitary pads for use while in the field.
- Displaying posters on gender awareness guidelines in all operational sites, as well as anti-harassment posters and encourage women to report any sexual harassment.
- Ensuring that recruitment, mobilization, and training include women and respect women's time constraints when feasible.
- Explicit inclusion of gender issues in all training modules.
- Ensuring that women who are pregnant or breastfeeding and recruited during the campaign are assigned to roles without exposure to insecticide.
- Providing sex-disaggregated data for all indicators, as appropriate.

During the 2021 IRS campaign, women represented 19.3 percent of the seasonal staff for the 25 operational sites versus 18.58 percent in 2020.

Table 11: Female Participation during the 2021 IRS Campaign.

Category	Female	Male	Total	% Female
Mobilizers	67	398	465	14.4%
Team Leaders	20	104	124	16.1%
District Coordinators	0	2	2	0.0%
Supervisors (ICP)	4	43	47	8.5%
Spray Operators	142	672	814	17.4%
Site Managers	1	24	25	4.0%
Spray Pump Technicians	1	33	34	2.9%
Washers	84	0	84	100.0%
Storekeepers	4	21	25	16.0%
Guards	0	49	49	0.0%
Finance Assistants	1	1	2	50.0%
Logistics Assistants	0	2	2	0.0%
Monitoring and Evaluation (M&E)	0	2	2	0.0%
Total	324	1,351	1,675	19.3%

Figure 5: Female Spray Operators



Female NMCP Supervisor in Solenzo



Female Spray Operators in Kampti

5. ENTOMOLOGY

Quality assurance cone bioassay tests were conducted by the Health Sciences Research Institute / Institut de Recherche en Sciences de la Santé (IRSS) on interior house walls in Solenzo and Kampti health districts three to five days after spraying.

5.1. MOSQUITO INSECTICIDE SUSCEPTIBILITY

An. gambiae s.l. larvae were collected from different larval habitats from 12 localities, brought to the IRSS insectary and reared to adults prior to use in bioassays in order to assess the insecticide resistance status of adult *An. gambiae* s.l. The WHO tube tests were conducted to monitor insecticide susceptibility to insecticides used for IRS, namely pirimiphos-methyl (0.25%) and clothianidin (2%). WHO criteria were used to classify populations as ‘resistant’ if less than 90 percent mortality was observed, suspected resistance if between 90-97 percent and susceptible if between 98-100 percent. Tests were conducted from August to October 2020.

Susceptibility (98-100 percent) was recorded 24 hours after exposure to 0.25% pirimiphos-methyl (PM) in 15 sites, including the two IRS sites of Solenzo and Kampti (Figure 6). There was possible resistance (90-98 percent mortality) recorded in Mangodara, Tiefora, Diebougou, Karangasso-Vigue and Seguenega (non-IRS sites). Mortality rates were 100% at all the sites, including the PMI IRS sites 120 hours (5 days) after exposure to 2% clothianidin papers. Based on susceptibility results, Actellic CS, SumiShield WG and Fludora Fusion WP-SB can continue to be used for IRS as part of a rotation strategy at the present IRS sites.

Figure 6: Results of Susceptibility Tests with 0.25 Percent Pirimiphos-Methyl in WHO Tubes Against Wild *An. gambiae* s.l. from 20 Sites

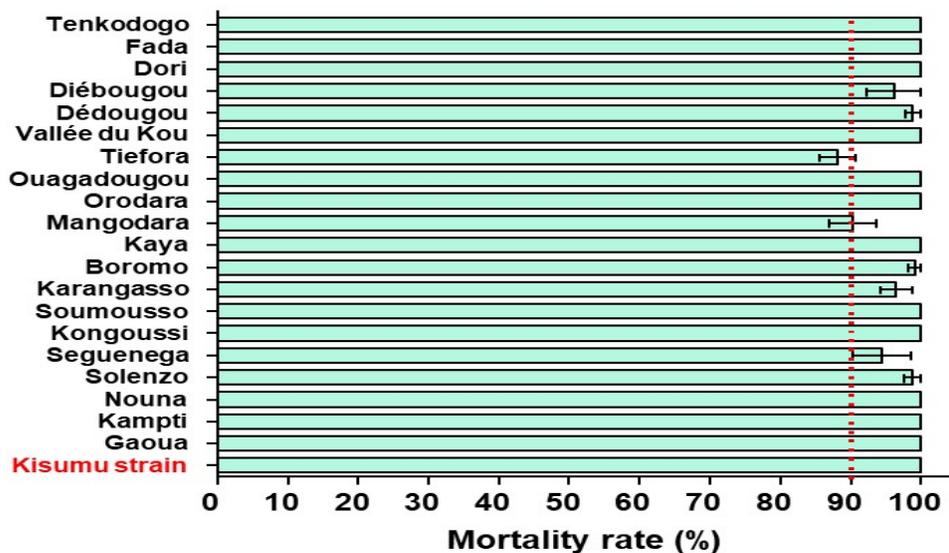
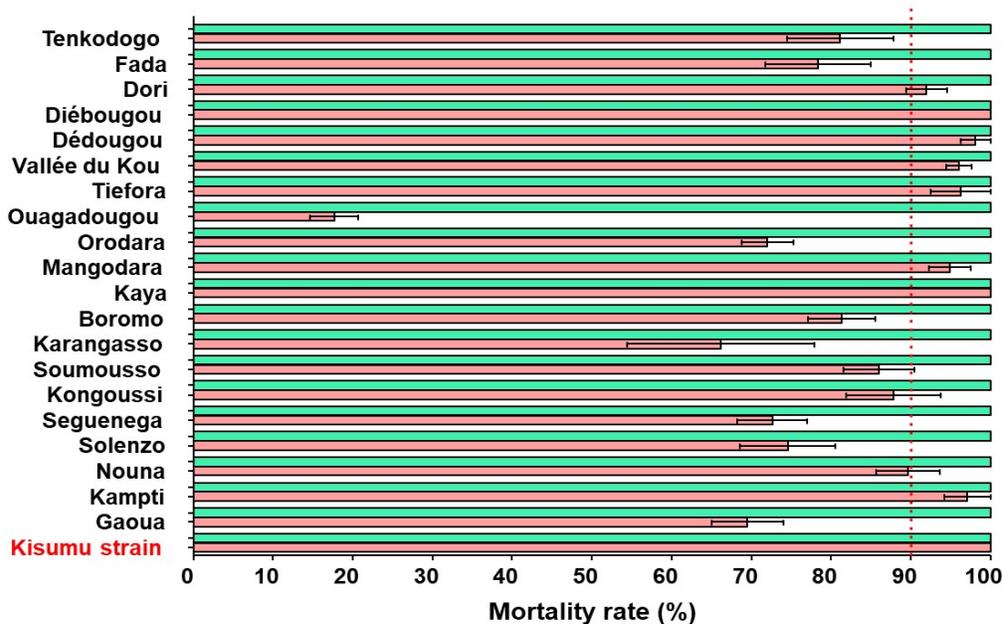


Figure 7: Results of Susceptibility Tests with 2% Clothianidin in WHO Tube Tests Against *An. gambiae* s.l. in 20 Sites. Mortality at 24h (Orange Bars) and Mortality at Five Days (Green Bars).



5.2. IRS QUALITY ASSESSMENT

We conducted cone bioassays in two villages in each district (Kampti and Solenzo). Each village was separated by at least 20 km. Five houses were randomly selected for bioassay in each village, for a total of ten houses per district (Table 12). Different wall substrates were tested, namely mud and cement, according to the WHO protocol for evaluation of residual efficacy (WHO, 2016).

Laboratory reared *An. gambiae* Kisumu (susceptible reference strain) females (aged three to five days old, unfed) and *An. coluzzii* VKPER (pyrethroid resistant strain) were tested according to the WHO protocol for evaluation of residual efficacy (WHO, 2016). Batches of ten mosquitoes were exposed for 30 minutes inside a WHO plastic cone at three different points of the sprayed wall surfaces in each selected house: at low level (0.5 meter), middle level (one meter high) and upper level (two meters high).

A negative control cone bioassay was conducted for every house by exposing mosquitoes to an unsprayed surface of a similar wall material. To avoid the possibility that the control mortality increases due to the fumigant effect of insecticides, bioassays on an unsprayed portable surface were done outside sprayed houses in the shade. At the end of the test, mosquitoes were transferred using an aspirator to paper cups and supplied with 10 percent glucose solution. Cups were placed in a cool box, which was covered with a wet towel. Knock-down was assessed 30 and 60 minutes after the end of exposure and mortality was scored every 24 hours post-exposure for Actellic CS and every 24 hours for five days consecutively (or until 100% mortality was scored) for Fludora Fusion WP-SB. The team also tested the fumigant effect by placing females of *An. gambiae* Kisumu and *An. coluzzii* VKPER in small cages at a distance of one meter from a treated wall. We used a total of 10 mosquitoes per cage. A negative control cone bioassay was done for every house by exposing mosquitoes to an unsprayed surface of a similar untreated wall material.

Table 12: Location of Quality Assurance Cone Tests, Insecticide Sprayed and Number of Houses Tested.

District	Insecticide Sprayed	Villages Selected for Cone Bioassay	Houses Tested
Kampti	Actellic CS	Loglona	5
	Actellic CS	Kampti Center	5
Solenzo	Fludora Fusion WP-SB	Molé	5
	Fludora Fusion WP-SB	Solenzo Center	5

High mortality with both the susceptible (*An. gambiae* Kisumu) and pyrethroid resistant (*An. coluzzii* VKPER) strains were observed following exposure to both mud and cement walls in all sites (Tables 13 and 14, Figures 8 and 9). Overall mortality after 24 hours for houses sprayed with Actellic CS and Fludora Fusion WP-SB was 100 percent. These results indicate that spray application was conducted to acceptable quality standards in the houses tested in Kampti and Solenzo districts. Control mortality rates remained low (<5 percent). Monthly monitoring of residual efficacy will be performed using susceptible *An. gambiae* Kisumu and *An. coluzzii* VKPER until mortality is <80 percent for two consecutive months. The fumigant effect of Fludora Fusion WP-SB was high and reached 100% at 120h post exposure (Figure 10). The fumigant effect was lower for Actellic CS at <40 percent in Kampti district at 24h post exposure (Figure 11).

Table 13: Number of *An. gambiae* Kisumu (A) and *An. coluzzii* VKPER (B) Exposed and Percentage Mortality 24 hours After Exposure to Fludora Fusion WP-SB in Solenzo District

<i>A- An. gambiae</i> Kisumu strain									
District	Villages	Wall type	Sprayed					Control	
			Cone height (m)			Total	% Mortality (24h)	Total	% Mortality (24h)
			0.5	1	2				
Solenzo	Molé	Mud	30	26	26	82	100	NA	NA
		Cement	19	18	20	57	100	32	0
	Center	Mud	24	27	25	76	100	NA	NA
		Cement	19	18	18	55	100	28	0
Total			100	102	100	302	100	60	0
<i>B- An. coluzzii</i> VKPER									
District	Villages	Wall type	Sprayed					Control	
			Cone height (m)			Total	% Mortality (24h)	Total	% Mortality (24h)
			0.5	1	2				
Solenzo	Molé	Mud	25	25	27	77	100	NA	NA
		Cement	19	22	21	62	100	31	0
	Center	Mud	28	28	26	82	100	NA	NA
		Cement	17	19	19	55	100	32	0
Total			100	102	100	302	100	63	0

Spraying was conducted on May 10, 2021 and cone bioassay was done on May 15, 2021.

Figure 8: Knock-Down (30 and 60 Minutes) and 24-hour Mortality of Susceptible *An. gambiae*. Kisumu (A) and *An. coluzzii* VKPER (B) Exposed to Fludora Fusion WP-SB Sprayed Mud and Cement Walls in Molé (Rural Area) and Solenzo Center (Urban Area).

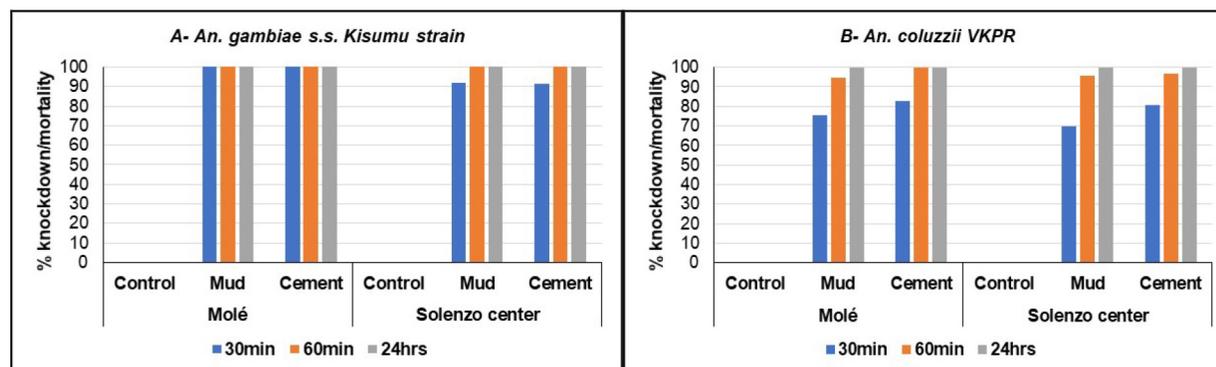


Table 14: Number of *An. gambiae* Kisumu (A) and *An. coluzzii* VKPER (B) Exposed and Percentage Mortality 24 Hours after Exposure to Actellic CS in Kampti District.

A- <i>An. gambiae</i> Kisumu strain									
District	Villages	Wall type	Sprayed				Control		
			Cone height (m)			Nb tested	% Mortality (24h)	Nb tested	% Mortality (24h)
			0.5	1	2				
Kampti	Loglona	Mud	28	29	26	83	100	NA	NA
		Cement	18	20	21	59	100	30	0
	Center	Mud	8	11	12	31	100	NA	NA
		Cement	42	42	38	122	100	27	0
Total			96	102	97	295	100	57	0
B- <i>An. coluzzii</i> VKPER									
District	Villages	Wall type	Sprayed				Control		
			Cone height (m)			Nb tested	% Mortality (24h)	Nb tested	% Mortality (24h)
			0.5	1	2				
Kampti	Loglona	Mud	29	28	30	87	100	NA	NA
		Cement	19	19	20	58	100	31	0
	Center	Mud	10	8	8	26	100	NA	NA
		Cement	39	41	39	119	100	28	0
Total			97	96	97	290	100	59	0

Spraying was conducted on May 26, 2021 and cone bioassay was done on May 29, 2021.

Figure 9: Knock-Down (30 and 60 Minutes) and 24-hour Mortality of Susceptible *An. gambiae* Kisumu (A) and *An. coluzzii* VKPER (B) Exposed to Actellic CS Sprayed Mud and Cement Walls in Loglona (Rural Area) and Kampti Center (Urban Area).

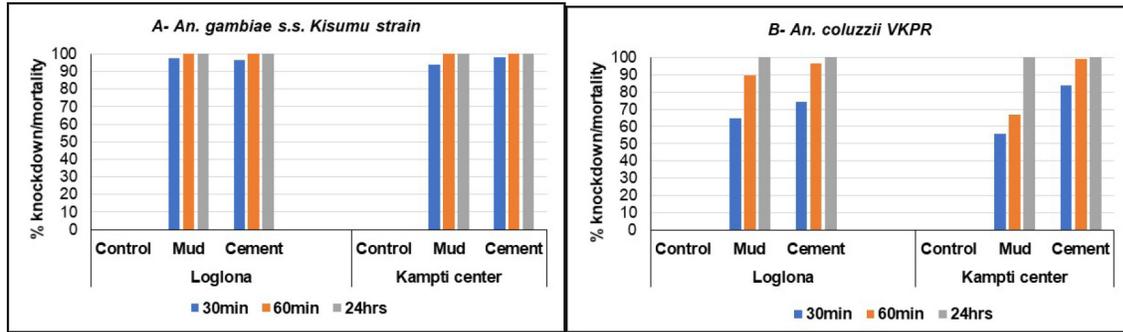


Figure 10: Fumigant Assay on *Anopheles gambiae* “Kisumu” and *An. coluzzii* VKPER in Solenzo District Sprayed with Fludora Fusion WP-SB.

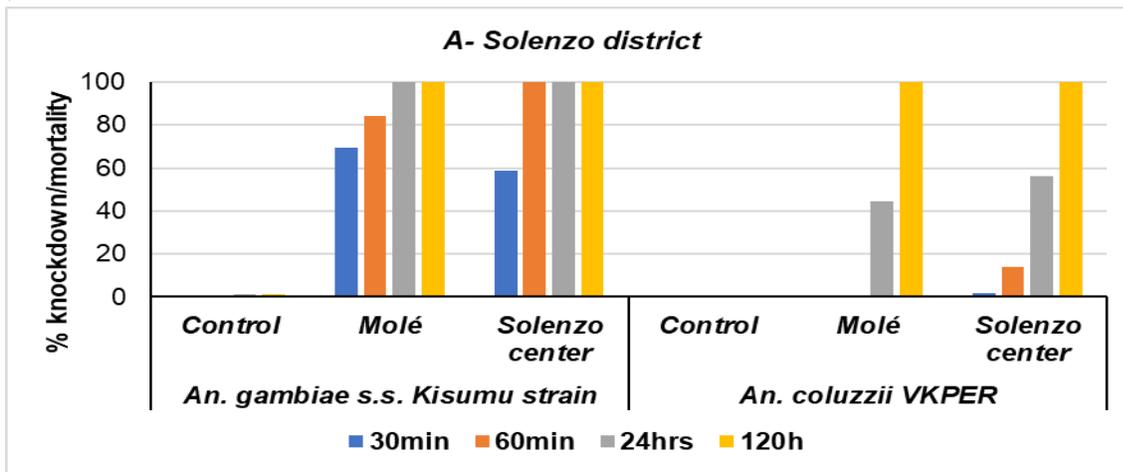
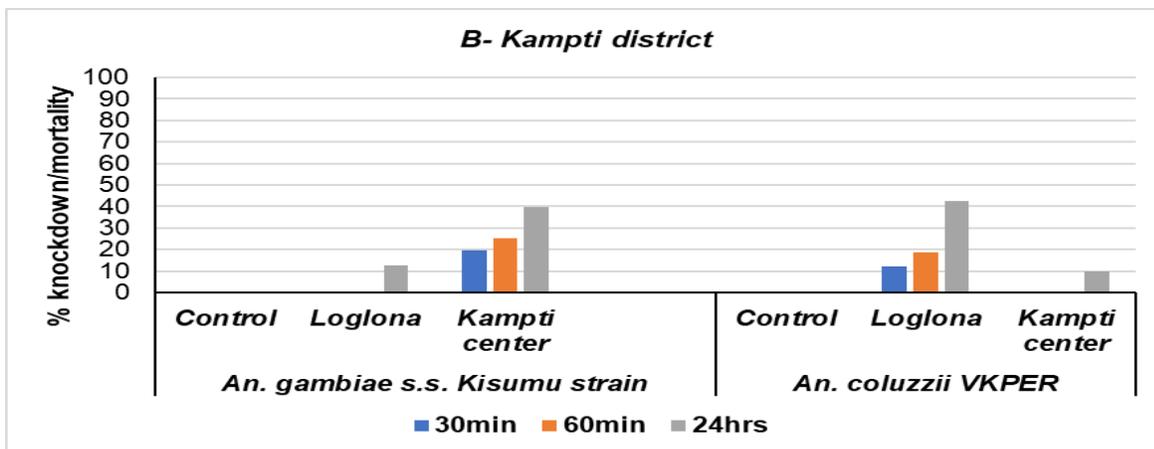


Figure 11: Fumigant Assay on *Anopheles gambiae* “Kisumu” and *An. coluzzii* VKPER in Kampti District Sprayed with Actellic® 300CS.



6. ENVIRONMENTAL COMPLIANCE

6.1 IRS CAMPAIGN ASSESSMENTS

Environmental Compliance

The PMI VectorLink Burkina Faso project operated under a supplemental environmental assessment (SEA) approved by USAID in 2018, which authorizes the use of pyrethroids, organophosphates, carbamates, neonicotinoids, clothianidin/deltamethrin combination and pyrrole (chlorfenapyr) (when listed by WHO PQ). During the 2021 IRS campaign, the project used SumiShield WG 50 (Clothianidin) and Fludora® Fusion to spray the district of Solenzo, and Actellic 300CS for the district of Kampti.

Challenges and Considerations

New operational sites were created in both Kampti and Solenzo districts because of the increased number of SOPs based on a shorter spray period (changed from 30 days to 20 days due to other conflicting activities at the district level) as well as the decongestion of the sites to limit the number of spray teams per operational site. A total of 25 operational sites (18 in Solenzo and seven in Kampti) were used for IRS campaign activities in 2021.

PMI VectorLink Burkina Faso conducted an environmental geographical reconnaissance in those areas to identify new appropriate sites for storerooms, the safest method of insecticide and SOPs and transport, and environmental measures required to protect communities during the spray campaign.

Pre-Season Environmental Compliance Assessments

Prior to the 2021 campaign, the PMI VectorLink Burkina Faso team, in collaboration with NMCP's IRS focal person, conducted initial Pre-Season Environmental Compliance Assessments (PSECA) that provided the basis for the detailed estimate of all sites' rehabilitation work, accessibility of structures to be sprayed for the final deployment of transport, and other operational aspects to ensure a successful campaign.

Approximately two weeks before the commencement of spray activities, the project performed another inspection (final PSECA) to verify that all necessary work was completed, and that the facilities were ready to receive insecticide shipments prior to starting spray operations. Based on the outcome of the inspections, all necessary repairs were made to soak pits prior to the launch of the spray campaign. PMI VectorLink Burkina Faso also made available all documents, data sheets, guide to first aid, recommendations in case of spillage and warning signs. In addition, before the campaign, all seasonal staff underwent medical checkups, as well as pregnancy tests for women.

Although the VectorLink project's Environmental Compliance Officer (ECO) is principally responsible for environmental compliance of the VectorLink project, the NMCP's environmental compliance representative and the provincial environmental compliance officer in both districts participated in environmental inspections. This team used smartphones with PMI standard environmental compliance checklists.

During this exercise, the project continued to strengthen the capacity of IRS counterparts in environmental compliance for IRS activities, and ensured that they were cognizant with PMI's Best Management Practices (BMP) guidelines.

Environmental Compliance Activities during the Campaign

PMI VectorLink Burkina Faso's staff supervised spray operations and ensured that environmental compliance standards as specified in the BMPs are met, including the proper use of PPE, progressive rinsing of spray pumps, condition of vehicles/tricycles used to transport spray teams and insecticides, storage conditions of IRS materials, as well as the display of warning signs at district warehouses and site storerooms. The staff also closely monitored the proper management and storage of IRS waste, accuracy of the stock cards at the

warehouse level and use of proper spray techniques by SOPs. In addition, the supervision team ensured that beneficiaries had received clear information about the IRS campaign and knew how to prepare their structures for spraying. PMI VectorLink Burkina Faso monitored the condition of fixed soak pits on a regular basis to ensure proper flow and drainage. The use of the only mobile soak pits in Tansila operational site was supervised by DHMT, VectorLink staff and the health post nurses. The trained district coordinators assisted with the inspection of vehicles and tricycles for their conformity to transport SOPs and materials to the field.

The VectorLink team, along with representatives from provincial environmental compliance officers, performed environmental inspections of operational sites in both districts.

Post-Spray Environmental Compliance Activities

At the end of the 2021 spray campaign, VectorLink Burkina Faso cleaned all IRS materials. The project then transported materials from IRS sites to the district warehouses (Kampti and Solenzo). However, the remaining insecticide (1,067 bottles of Actellic 300CS), were transferred to the central warehouse in Diebouyou. The VectorLink team conducted post-spray site decontamination and decommissioning of operations sites. After the VectorLink Burkina Faso project restored the sites to a well-maintained state and made them safe for the surrounding communities, the VectorLink team formally handed the sites back to the health centers and community representatives that provided the facilities for safekeeping until the next IRS campaign.

The VectorLink Burkina Faso, along with the NMCP's IRS focal person, performed a post-spray inspection of the central warehouse, district warehouses and all operations sites in Kampti and Solenzo, and ensured that soak pits were properly closed and secured. The inspection team reported on the compliance of the 2021 IRS campaign with IRS standardized best practices for warehousing, human safety and environmental protection.

6.2 INCIDENT REPORTS

Three incidents (Table 15) took place during the implementation of the 2021 IRS campaign and were reported within the 48-hour incident-reporting deadline.

Table 15: Summary of Incidents Recorded during the 2021 IRS Campaign

	Incidents	Location	Date
1.	Incident related to a tricycle driver bitten by a dog.	Village of Dissankuy, Solenzo district	May 10, 2021
2.	Incident related to the loss of an empty sachet of Sumishield insecticide in the village of Tomacoura, district of Solenzo.	Village of Tomacoura, Solenzo district	May 11, 2021
3.	Incident related to a tricycle that tipped over while carrying a team of spray operators.	Moussankuy/Sanaba, Solenzo district	May 19, 2021

6.3 WASTE MANAGEMENT

Under the supervision of the Project Environmental Compliance Officer, all solid wastes generated from the 2021 spray campaign were collected and segregated. The team collected all empty insecticide sachets, and reconciled the numbers using ledger books and stock cards.

VectorLink signed an agreement with SAPHYTO for the incineration of empty SumiShield and Fludora Fusion sachets, as well as other items as needed. The plastic bags from the drinking water are given to a recycling company, Association Salubrité de Solenzo / Salubrity Association of Solenzo. Masks, chalk, and pump cartons are given to the same structure for composting. Table 16 illustrates the types of solid waste, disposal methods and sites.

Table 16: Waste Generated during the 2021 Spray Campaign and Planned Management Methods

Designation	Type	Disposal Method	Status of Disposal
Plastic materials	Plastic	Recycling/shredding and burial	Completed in July 2021
Actellic 300 CS empty bottles	Plastic bottle	Recycling	Completed in July 2021
SumiShield and Fludora Fusion empty sachets	Aluminum sachet	Incineration	Completed in July 2021
Batteries for flashlights	Alkaline	Landfilling	Completed in July 2021
Used masks	Synthetic polymer fibers	Incineration	Completed in July 2021
Chemical-resistant gloves	Polyvinyl Chloride (PVC)	Landfilling / Donation	Completed in July 2021
Others (garbage bag, absorbent paper, empty boxes, etc.)	Paper based, biodegradable materials, latex	Incineration / Repurposing	Completed in July 2021

7. MONITORING AND EVALUATION

7.1 DATA COLLECTION/ENTRY/QUALITY ASSURANCE

Building on the success of the mobile data pilot that took place in 2019, VectorLink Burkina Faso continued the use of mobile data collection for the 2021 IRS campaign. It was implemented at the primary point of collection through SOPs. The electronic data collection forms were revised and improved to ensure the collection of all PMI-requested indicators. The improvement involved the creation of the automatic generation of the IRS numbers in the form, to help SOPs with the proper marking of the structure and to reduce the possibility of duplicate IRS numbers. Before the beginning of the 2021 spray campaign, the project trained those involved in data collection on the data collection process and in completing all appropriate forms. Spray data was collected on tablets only. No paper forms were used during the 2021 campaign for data collection.

At the end of the day, the team leaders verified the data collected by the SOPs to ensure that the forms were properly filled out before being synchronized to the server. The summary table generated by smartphone was used by the team leader to fill the team leaders' form.

Figure 12: Use of Data Collection Tablets by the Spray Teams



Data Collection and House Marking

VectorLink Collect Database

To improve spray data entry, cleaning, and reporting, VectorLink Burkina Faso continued the collection of data using electronic tablets by SOPs at the household level during the 2021 IRS campaign in the two target districts (Kampti and Solenzo).

Before the campaign started, the M&E and operations teams worked together to gather the necessary metadata that enable the deployment of the database. These were then configured in the system before the start of the campaign to facilitate data synchronization.

Data Quality Assurance and Verification

During the 2021 spray campaign, 139 structures were visited by supervisors in the two districts (5 in Kampti and 134 in Solenzo). Table 17 below illustrates the DCV information.

Table 17: DCV Data Summary Table

Districts	DCV Using Smartphones		
	Number of CSPS Visited	Number of DCV Forms Filled	Number of Structures Verified
Kampti	2	3	5
Solenzo	22	131	134
Total	24	134	139

7.2 MHEALTH

To support rapid decision making across the various program components, the project continued to use mobile health (m-Health) applications to complement the CommCare tools used throughout the project. The complementary mHealth tools have been designed in Open Data Kit (ODK). The mHealth reporting tools for data collection and verification, which VectorLink Burkina Faso used throughout the spray campaign, included the Performance Monitoring Tracker (PMT), the job aids, and the mobile supervisory forms, including the digitization of Data Collection Verification (DCV) form.

Performance Monitoring Tracker (PMT)

On a daily basis, site managers summarized key operations data on a performance-tracking sheet. Storekeepers submitted those key operations data, via PMT SMS, to CommCare HQ via Telerivet to generate key indicators reports on campaign progress and performance through automated email reports. The key indicators reported in this system included: the number of SOPs that worked for the day, number of structures found, number of structures sprayed, and number of insecticide sachets/ bottles used during the campaign.

Job Aid Messages

VectorLink Burkina Faso sent out daily SMS messages as alerts to coordinators, supervisors, team leaders, and storekeepers to remind them about topics such as compulsory breakfast, wearing PPE, gender awareness, the daily number of targeted structures, and any other instructions preventing the recurrence of any anomaly observed the previous days. Throughout the same channel, updates were made to spray teams based on the supervision's observations. A total of 1,164 SMS messages (for an average of three reminders per day) were sent to 831 seasonal workers during the IRS campaign.

Supervision tools

A total of 134 DCV forms and 2,443 supervision forms were successfully completed by central and regional supervisors, as well as site coordinators through the CommCare application. Table 18 below provides a breakdown of the submitted forms.

Table 18: Submitted Supervisory Forms during the Spray Campaign

Supervisory Form	ODK	CommCare
	Submitted	Submitted
Morning Mobilization	19	475
Transportation Vehicle/Tricycles Inspection	25	369
Homeowner Preparation and Spray Operator Performance	32	953
End of Day Cleanup	33	224
Storekeeper Performance	41	291
Data Collection Verification (DCV)	47	134

7.3 RESULTS

Key Spray Results

The M&E plan tracks performance and progress across the different components of the project based on the following key objectives: implementation of vector control interventions, entomological and epidemiological data to drive decision-making, support the delivery and storage of IRS and other vector control products, and innovation. The M&E plan (Annex A) indicator matrix shows how PMI VectorLink Burkina Faso has performed against targets.

To monitor performance during the campaign, the key indicators tracked throughout the campaign included structures targeted, structures found, and the proportion of structures sprayed out of those targeted (spray progress) and those found (spray coverage). During spraying, the project collected population details to establish the number of people protected. This included the total population disaggregated by gender and special groups, such as pregnant women and children under five. Table 19 provides a summary of key results.

Table 19: Summary of 2021 Key IRS Results

Region	Districts	Structures Found by SOPs	Structures Sprayed	Structures Not Sprayed	Spray Coverage	Population Protected	Pregnant Women Protected	Children <5 Years Old Protected	Population Not Protected	Pregnant Women Not Protected	Children Under 5 Years Old Not Protected
South-West	Kampti	34,965	32,808	2,157	93.83%	111,522	4,239	22,534	6,918	168	1,227
Boucle du Mouhoun	Solenzo	154,460	142,715	11,745	92.40%	474,727	26,979	97,485	21,374	846	3,146
Total		189,425	175,523	13,902	92.66%	586,249	31,218	120,019	28,292	1,014	4,373

Insecticide Usage and SOP Performance

SOPs had a daily target of 14 structures per day per spray operator at the start of the spray campaign. Spray operations started in remote areas, progressively moving inwards towards the more centrally located operations sites in the field. The project used a total of 21,075 sachets of Fludora® Fusion, 10,581 sachets of SumiShield 50 WG and 6,421 bottles of Actellic 300CS to spray 175,523 structures (Table 20).

Table 20: 2021 IRS Results by District

Region	District	Structures Targeted	Structures Sprayed	Spray Progress (%)	Number of Insecticide Sachets Used	Average Number of Structures per Sachet per District	Average Number of Structures Sprayed per District per Day
South-West	Kampti	32,347	32,808	101.43%	6,421	5.1	1,640
Boucle du Mouhoun	Solenzo	138,929	142,715	102.73%	31,656	4.5	7,136
Total		171,276	175,523	102.48%	38,077	4.6	8,776

Reasons for Non-Spray

During the 2021 IRS campaign, VectorLink Burkina Faso did not spray 7.3 percent (13,902 structures) of all found structures, compared to 5.39 percent (9,239 structures) in 2020. The key reasons for non-sprayed structures included: locked structures (2.4 percent), refusals (1.8 percent), temporary food stores (1.4 percent), and sick (0.5 percent). Table 21 below gives the breakdown for the reasons for non-sprayed structures by district.

Table 21: Reasons for Non-Spray by District

Reasons for Non-Spray	Kampti	Solenzo	Total
Locked	494	3,987	4481
Funeral	57	184	241
Missed Spray Appointment	196	650	846
Other	60	1,443	1,503
Refused	1,223	2,181	3,404
Sick	89	780	869
Temporary Food Store	38	2,520	2,558
Total	2,157	11,745	13,902

8. CHALLENGES, LESSONS LEARNED AND KEY RECOMMENDATIONS

8.1 CHALLENGES

The 2021 IRS campaign was carried out in the two target districts marked by some challenges, including:

- Implementing spray operations under the context of the COVID-19 pandemic.
- Overlapping of spray dates with other activities implemented (i.e. seasonal malaria chemoprevention campaign) by NMCP or DRS/DHMT, which led to the extension of the spray campaign period of performance.
- The delay in insecticide delivery in-country resulted in postponing the spray campaign start date in Kampti.

8.2 LESSONS LEARNED / RECOMMENDATIONS

At the end of the campaign, lessons learned by the project and recommendations included:

- The IRS campaign in a context of the COVID-19 pandemic is feasible through good planning and preparation, the establishment of alternative approaches, the interdisciplinary effort and support from partners (communities, stakeholders, opinions leaders, etc.).
- Continue to work closely with the insecticide manufacturers to ensure timely delivery in-country.
- The participation of government officials and health managers in IRS operations further enhanced their interest and ownership of project activities. It was acknowledged during several working sessions that activities were better coordinated between government counterparts and the project in 2021.

ANNEX A: MONITORING & EVALUATION (M&E) PLAN

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
Objective 1: Implementation of Malaria Vector Control (VC) Interventions														
1.1 Successfully Execute IRS and Other Integrated Malaria VC Activities														
1.1.1	Number and percentage of completed annual country work plans developed and submitted on-time	X	Project records Annually	Country										
1.1.2	Number of eligible structures targeted for spraying		Project records Annually	Country	245,192	266,765	266,765	221,255	220,482	135,141	171,276	189,425	TBD	
1.1.3	Number of eligible structures sprayed with IRS1		Project records Annually	Country	208,413	258,766	258,766	201,901	135,141	162,037	145,585	175,523	TBD	
1.1.4	Percentage of total structures targeted for spraying that were sprayed with a residual insecticide (Spray Coverage)		Project records Annually	Country	85%	97.0%	85%	91.3%	85%	94.60%	85%	92.7%	85%	
1.1.5	Number of people protected by IRS		Project records Annually	Country Sex Pregnant women Children <5	867,715	766,374 Males: 363,340 Females: 403,034 Pregnant Women: 14,183 Child<5: 125,206	663,765	587,248 Males: 281,103 Females: 306,145 Pregnant Women: 11,959 Child<5: 92,809	770,000	508,017 Males: 244,386 Females: 263,631 Pregnant Women: 21,103 Child<5: 95,445	536,983	586,249 Males: 276,231 Females: 310,018 Pregnant Women: 31,218 Child<5: 120,019	TBD	
1.1.6	Number and percentage of vector control project country programs submitting an EOSR within 45 days after the end of spray (including completing MEP and EMMR)	X	Project Annually	Country	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%		
1.1.7	Number and percentage of IRS country programs that conduct a Post-Spray Data Quality Audit within 90 days of spray completion	X	Data Collection Forms Annually	Country	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD	

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
1.1.8	Number of Insecticide Treated Nets (ITNs) distributed, by channel		Project Records Annually	Country Channel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD	
1.1.9	Number and percentage of countries completing ITN durability monitoring data collection as planned in a given project year	X	Project Records Annually	Country										
1.1.10	Number and percentage of PMI-funded durability monitoring surveys with reports submitted within 90 days of the end of data collection	X	Project Records Annually	Country										
1.2	Strengthen Capacity of NMCPs, VC Personnel, and Other Institutions to Implement and Manage IRS and Other VC Activities													
1.2.1	Total number of people trained to support VC in target areas		Project Training Records Annually	Country VC Intervention Sex Job Function	2,205	2,227 Males: 1,789 Females :438	2,227	2,045 Males: 1,648 Females :397	2,045	1,493 Males: 1,228 Females: 265	1,493	1,823 Males: 1,475 Females: 348	TBD	
1.2.2	Total number of people trained to support VC in target areas with USG funds ²		Project Training Records Annually	Country VC Intervention Sex Job Function	IRS	SOPs: 749 TLs: 125 Supervisor: 273 IRS	IRS	SOPs: 547 TLs:109; Supervisor : 272 IRS	SOPs: 661 TLs:132; Supervisor: 272	SOPs: 521 TLs:105; Supervisor: 253	SOPs: 612 TLs:99; Supervisor: 133	SOPs: 834 TLs:124; Supervisor: 107		
1.2.3	Number of people trained during the Master (National) Training and/or IRS Training of Trainers.		Project Training Records Annually	Country Sex Type of Training	128	274 Males: 240, 87.9% Females: 34, 12.5%	274	275 Males: 240, 87.3% Females: 35, 12.7%	275	25 Males:19; 76% Females: 6; 24%	25	25 Males:20; 80% Females: 5; 20%	TBD	

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
1.2.4	Total number of people hired to support VC in target areas.		Project Records Annually	Country VC Intervention Sex Job Function	1,808	1,147 M: 958, 83.5% F: 189, 16.5% SOPs: 749 TLs: 125 Supervisors: 273 IRS	1,147	2,045 M: 1,648; 80.58% F: 397, 19.41% SOPs: 547 TLs:109; Supervisor: 272	2,045	1,394 Male: 1,142; 81.92% F: 252, 18.07%	1,395	1,628 Male: 1,309; 80.4% F: 319, 19.6% SOPs: 814 TLs:124; Supervisor: 107	TBD	
1.2.5	Number of VC project training workshops targeting NMCP and other host country staff		Project Training Records Annually	Country Technical Area Job Function	N/A	N/A	TBD	N/A	4	4	5	5	TBD	
1.2.6	Number of NMCP and other vector control host country staff who have logged into VectorLink Collect		DHIS2 Logs Annually	Country Job Function	N/A	N/A	15	15	15	16	16	16	TBD	
1.2.7	Number and percentage of technical assistance requests to support ITN distribution planning and/or implementation completed on time as planned in a given project year	X	Project Records Annually	Country Technical Area Channel										
1.2.8	Number and percentage of technical assistance requests to support operational routine monitoring systems for continuous ITN distribution completed on time as planned in a given project year	X	Project Records Annually	Country Channel										
1.3	Environmental Compliance and Safety													
1.3.1	Number of seasonal vector control personnel trained in environmental compliance and personal safety standards in vector control implementation		Project Training Records Annually	Country Sex (# and %) Job Function	2,171	2,227	2,227	2,045	2,045	917	917	1482	TBD	
1.3.2	Number of health workers receiving insecticide poisoning case management training		Project Training Records Annually	Country Sex (# and %)	66	98	70	70	70	51	0	0	TBD	

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
1.3.3	Number of adverse reactions to pesticide exposure documented that resulted in a referral for medical care		Incident Report Forms Annually	Country Type of Exposure	0	0	0	0	0	0	0	0	0	
1.3.4	Number of SEAs and Letter Reports submitted at least 60 days prior to the commencement of VC campaigns	X	Project Records Annually	Country										
1.3.5	Number and percentage of permanent and mobile soak pits inspected and approved prior to IRS campaigns or before first use		Project Records - PSECAs Annually	Country	34; 100%	34; 100%	22; 100%	22/22, 100%	14; 100%	23; 100%	21;100%	28;100%	TBD; 100%	
1.3.6	Number and percentage of storehouses inspected and approved prior to IRS campaigns		Project Records - PSECAs Annually	Country Storehouse Type	37; 100%	36; 97%	37; 100%	22/22, 100%	22; 100%	23; 105%	25;100%	25;100%	TBD; 100%	
1.4	Promote Gender Equality in all Facets of Planning and Implementation													
1.4.1	Number and percentage of women hired to support VC campaigns		Project Records Annually	Country Sex (# and %) Job Function	632; 35%	453; 19,67%	572, 25%	398, 26.9%	398; 45%	246; 17.53%	50%	325; 24.1%	TBD; 50%	
1.4.2	Number and percentage of women hired in supervisory roles in target areas for VC activities		Project Records Annually	Country Sex (# and %) VC Intervention Job Function	78; 50% IRS	Females 36, 13.19% Team Leaders 24; 19.20% Site Manager: 1; 3.03% NMCP:1; 16.67% ICP:10, 0.99%	36 IRS	Females 38/36, 105.5% Team Leaders 18: (18/109) 16.5% Site Manager: 1; (1/22) 4.7% NMCP: 3; (3/9); 33% ICP: 16/77, 20.7%	36; 100%	Females 22; 12.64% Team Leaders 18; 17.14% NMCP 2; 9.09% ICP: 2; 7.41%	36; 50%	Females 27.75. Team Leaders 20; 76.9% NMCP 2; 7.7% ICP: 4; 15.4%	TBD; 50%	
1.4.3	Number and percentage of trainees (permanent and seasonal) who have completed gender awareness training		Project Records Annually	Country Sex (# and %) Job Function	2,006; 100%	2,227/2006; 110% Males: 1,789/2,227; 80,33% Females: 438/2,227; 19,67%	2045; 100%	2,045 /2,045, 100% Males: 1,648 /2,045; 80,6% Females: 397/2,045; 19,4%	2,045; 100%	1,403 Males: 1,157; 82% Female: 246; 18%	465;100%	465/465; 100% Males: 398; 85.6% Female: 67; 14.4%		

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
1.4.4	Number and percentage of women in senior leadership roles in VectorLink country offices	X	Project Records Annually	Country Sex (# and %)				1	TBD	NA				
1.5	Implement and Support SBCC and Mobilization Activities													
1.5.1	Number of radio talk shows and messages aired		Project Records Annually	Country VC Intervention Talk Show or Radio Spot	120	120	120	120	120	124	124	130	TBD	
1.5.2	Number of print materials distributed to or targeted at beneficiaries		Project Records Annually	Country VC Intervention	140	140	140	140	140	260	260	979	TBD	
1.5.3	Number of people reached with vector control and/or SBCC messages via door-to-door messaging		Project Records Annually	Country VC Intervention Sex	867,715	63,348* Door-to-door by IEC mobilizers (messaging was mostly done via radio spots)	63,348	103,706	103,706	138,723	138,273	163,273	TBD	
2. Entomological and Epidemiological Data to Drive Decision-Making														
2.1	Vector Control Activities Monitored via Entomological and Epidemiological Data													
2.1.1	Number of project-supported entomological sentinel sites established to monitor vector bionomics (vector species, distribution, seasonality, feeding time, and location)		Entomological Reports Annually	Country VC Intervention	9; 100%	9;100%	14; 100%	14; 100%	14, 100%	14, 100%	14, 100%	14, 100%	TBD; 100%	
2.1.2	Number and percentage of vector bionomics monitoring sites measuring all basic entomological indicators (species composition, indoor and outdoor human biting rates, hourly human biting rates, indoor resting densities)		Entomological Reports Annually	Country VC Intervention	9; 100%	9;100%	14; 100%	14; 100%	14, 100%	14, 100%	14, 100%	14, 100%	TBD; 100%	
2.1.3	Number and percentage of vector bionomics monitoring sites measuring the following all advanced entomological indicators: sporozoite rates and entomological inoculation rates		Entomological Reports Annually	Country IRS or Entomology Only Program	9; 100%	9;100%	14; 100%	14; 100%	14, 100%	14, 100%	14, 100%	14, 100%	TBD; 100%	

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
2.1.4	Number and percentage of insecticide resistance monitoring sites that tested all priority insecticides for the relevant local vector control intervention		Entomological Reports Annually	Country VC Intervention	18; 100%	18;100%	12; 100%		12, 100%	TBD	12; 100%	12,100	TBD; 100%	
2.1.5	Number and percentage of houses in which WHO cone bioassays were conducted within two weeks of spraying with greater than 98% test mortality recorded for IRS countries		Entomological Reports Annually	Country Insecticide Type	12; 100%	12;100%	30; 100%	30; 100%	30; 100%	20; 67%	30; 100%	30; 100%	TBD; 100%	
2.1.6	Number and percentage of sites that conducted WHO cone bioassays after the completion of spraying at monthly intervals until test mortality drops below 80% for two consecutive months for IRS countries		Entomological Reports Annually	Country Insecticide Type	3; 100%	3;100%	3; 100%	3; 100%	3; 100%	2; 66%	2; 100%	2; 100%	TBD; 100%	
2.1.7	Number of countries with an integrated vector control analytics dashboard created by PATH, available for decision-making	X	Project Reports Annually	Country	N/A	N/A	1(100%)	1(100%)	1: 100%		3: 100%	3:100%	TBD; 100%	
2.1.8	Number of people trained (VectorLink and non VectorLink staff) in entomological monitoring		Project Records Annually	Country Sex (# and %)	8	10 Males: 7, 70% Females :3, 30%	5	TBD	TBD	TBD	TBD	22 Males: 19, 86% Females: 3, 14%	TBD	
2.1.9	Number and percentage of sites in which WHO cone bioassays were conducted to evaluate bio-efficacy of bed nets		Entomological Records Annually	Country	0; N/A	0; N/A	0; N/A	0; N/A	2; 100%	2; 100%	2; 100%	2; 100%	TBD; 100%	
2.1.10	Number of nets in which WHO cone bioassays were conducted to evaluate bio-efficacy of bed nets		Entomological Records Annually	Country	0; N/A	0; N/A	0; N/A	0; N/A	90; 100%	90; 100%	90; 100%	TBD (ongoing)	TBD; 100%	
2.2	NMCPs Develop Country-Level IRS and Other Malaria VC Strategies													
2.2.1	Number and percentage of countries with an integrated malaria vector control strategy, including a plan for monitoring and managing insecticide resistance supported by the project	X	Project Records Annually	Country										

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
2.2.2	Number and percentage of countries with a data and visualization dashboard complete for IRS and/or entomology data in VectorLink Collect for vector control decision making	X	Project Records Annually	Country										
2.2.3	Number of countries that implement sub-national insecticide rotation	X	Project Records Annually	Country										
2.3	Build capacity of NMCPs and local institutions to collect, analyze, and use data for strategic malaria control decision-making													
2.3.1	Number of individuals trained from NMCPs and national institutions to review and interpret data for integrated vector control decision making		Project Training Records Annually	Country Job Function Organization	N/A	N/A	TBD	2	2	1	6	6	TBD	
2.3.2	Number and percent of targeted individuals that report using new analytical tools and/or skills in their planning, resourcing, implementation, or measurement activities		Capacity Assessments Thrice Over Project Life	Country Job Function Organization	N/A	N/A	10; 100%	10; 100%	10; 100%	10; 100%	20; 100%	20;100%	TBD	
3. Procurement and Logistics														
3.1	Cost-Effective Procurement Mechanism Established													
3.1.1	Number and percentage of insecticide procurements that had a pre-shipment QA/QC test, done by a third party, at least 60 days prior to spray campaign	X	Procurement Records Annually	Country Insecticide Type										
3.1.2	Number and percentage of insecticide procurements received on-time to allow for the initiation of spray operations as scheduled		Procurement Records Annually	Country Insecticide Type	1; 100%	1; 100%	1; 100%	1; 100%	1; 100%	1;100%	1; 100%	1;100%	TBD; 100%	
3.1.3	Number and percentage of targeted countries with international equipment procurements, including PPE, received on-time to allow for the initiation of vector control campaigns as scheduled	X	Procurement Records Annually	Country VC Intervention										
3.1.4	Number of VectorLink staff trained on procurement	X	Project Records Annually	Country										

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
3.2	Robust Inventory Management and Logistics Systems Established													
3.2.1	Number and percentage of logistics and warehouse personnel (seasonal and full-time) trained in VC supply chain management		Project Training Records Annually	Country VC Intervention Sex Job Function	36; 100%	40; 100%	40; 100%	26; 65%	33; 100%	23; 69%	22; 100%	25; 100%	TBD; 100%	
3.2.2	Number and percentage of operations site warehouses where physical inventories can be verified by daily stock records		Inventory and Stock Records Annually	Country	36; 100%	36; 100%	22; 100%	22; 100%	33; 100%	20; 60%	22; 100%	25; 100%	TBD; 100%	
3.2.3	Number and percentage of IRS countries that successfully completed spray operations without an insecticide stock-out	X	Inventory and Stock Records Annually	Country Insecticide Type										
4. Innovation														
4.1	Conduct operational research or monitoring to scale up new tools, methods, and approaches													
4.1.1	Number of operational research studies on promising new tools or new methods/approaches to existing tools that are implemented		Project Records Annually	Country Type of Innovation	N/A	N/A	2 Mobile Data Collection Mobile Payment of Seasonal workers	2 Mobile Data Collection Mobile Payment of Seasonal workers	2	1 Electronic Seasonal Timesheet	2 Mobile Data Collection Mobile Payment of Seasonal workers	2 Mobile Data Collection Mobile Payment of Seasonal workers	TBD	
4.2	Create and share knowledge through dissemination of best practices and lessons learned													
4.2.1	Number of innovations, best practices, and other data or lessons learned shared with other partners or international institutions for global reporting on the Vector Learning Exchange	X	Project Records Annually	Country Technical Area										
4.2.2	Number of individual members who use the Vector Learning Exchange	X	Project Records Annually	N/A										
4.2.3	Number of symposia and/or presentations submitted to and accepted at global conferences		Project Records Annually	Country Technical Area	N/A	N/A	TBD	0	1	0	1	0	TBD	
4.2.4	Number of success stories written or videos produced and shared on the VectorLink project website		Project Records Annually	Country	2	3	3	1	2	0	2	3	TBD	
4.2.5	Number of peer-reviewed journal articles submitted and accepted	X	Project Records Annually	Technical Area										
4.2.6	Number of contributions to vector control global or country policy and/or guidance documents		Project Records Annually	Country Technical Area	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	TBD	

#	Performance Indicator	Global Project Indicator	Data Source(s) and Reporting Frequency	Disaggregation (s)	Annual Targets and Results									
					Year 1		Year 2		Year 3		Year 4		Year 5	
					Target	Result	Target	Result	Target	Result	Target	Result	Target	Result
4.3	Develop and deploy cost-savings approaches													
4.3.1	Number of innovative or novel approaches implemented to achieve cost savings in IRS and integrated malaria vector control programs		Project Records Annually	Country VC Intervention	TBD		TBD		TBD	0	TBD		TBD	
4.3.2	Number of cost effectiveness assessments of existing approaches in the implementation of IRS and integrated malaria vector control programs		Project Records Annually	Country VC Intervention	1	1	1	1	1	1	1	1	1	
4.4	Cultivate public-private partnerships													
4.4.1	Number of private sector entities engaged with to establish public private partnerships to increase the quality and coverage of malaria vector control activities globally		Project Records Annually	Country	1	1	0	0	0	0	0	0	TBD	

ANNEX B: ENVIRONMENTAL MITIGATION AND MONITORING REPORT

List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
1. Education, Technical Assistance, Training	Availability of appropriate teaching modules	N/A	N/A
2. Research and Development <ul style="list-style-type: none"> • Implement laboratory environmental, health, and safety (EHS) manuals with standard operating procedures (SOPs), or use existing SOPs, for laboratory operations in accordance with country-specific compliance mechanisms. • Implement SOPs for the safe storage, transport, and use of equipment, chemical reagents, insecticides, and supplies in conformance with international best practices (e.g., WHO, FAO) and host country requirements. Provide training to workers on the approved SOPs or Waste Management Plan (WMP) developed for properly handling and disposing of wastes. 	Entomology activities are entrusted to the Institute of Research in Health Sciences/Institut de Recherche en Sciences de la Santé (IRSS) in Bobo Dioulasso. IRSS complies with international guidelines as sub-contractor to PMI VectorLink.	N/A	N/A
3. Public Health Commodities	N/A	N/A	N/A
4. Small-Scale Construction <p>Obtain all needed authorizations prior to construction: permits, environmental and social impact assessments, etc.</p> <p>Retain competent, licensed professionals to design and supervise construction</p> <p>Establish health, safety and environmental obligations in all contracts.</p>	N/A	N/A	N/A

List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
<p>Complete a site emergency action plan</p> <p>Provide safety training to all workers using construction equipment</p> <p>Identify closest health care facility to handle injuries</p> <p>Asbestos, lead based paints and other toxic materials will not be used under any circumstances. If the presence of asbestos is suspected in a facility to be renovated, the facility must be tested before rehabilitation works begins. Should asbestos be present, then the work must be carried out in conformity with host country requirements and with guidance to be provided by the Implementing Partner. All results of the testing for asbestos shall be communicated to the Chief of Party (COP).</p> <p>Develop and follow a waste management plan (WMP). Identify authorized recycling or disposal facilities prior to generation of waste.</p> <p>Minimize the generation of waste by:</p> <ul style="list-style-type: none"> - Correctly assessing material needs (not over-buying) - Reducing amount of packaging used by suppliers - Reusing material on site, such as use of discarded materials for leveling ground and filling trenches, etc. <p>Designate secure on-site waste storage facilities</p> <p>Ensure all workers are trained and dispose of wastes properly.</p> <p>Complete and track hazardous waste manifests for all shipments</p> <p>Source all construction material from an ecologically safe provider.</p> <p>Contractor must provide and all workers must use personal protective equipment (PPE) such as hardhats, footwear, dust mask, safety glasses and reflective vests, as needed.</p> <p>Ensure first aid and spill clean-up kits are easily available</p> <ul style="list-style-type: none"> • Contractors must comply with the “Small-Scale Construction” chapter of the USAID Sector Environmental 			

List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
<p>Guidelines (www.usaidgems.org/sectorGuidelines.htm).</p> <p>Contractor will provide drinking water, latrine and a handwashing station to workers.</p> <p>Contractors will arrange working hours to minimize disruption to the community.</p> <p>If needed, construct drainage canals and infiltration pits for management of storm water and prevention of soil erosion.</p> <p>Post-construction: ensure leftover materials have been properly disposed of.</p>			
5. Small-Scale Water and Sanitation	N/A	N/A	N/A
6. Nutrition	N/A	N/A	N/A
<p>7. Vector Control</p> <p>a. Insecticide selection for any USAID-supported malaria program is subject to the criteria listed in the USAID Programmatic Environmental Assessment, country SEAs, and host country requirements.</p>	<p>All insecticides used for the campaign met the USAID Programmatic Environmental Assessment selection criteria. The SEA, which was approved in June 2018, provides nationwide coverage from 2018 to 2022. In Burkina Faso, the SEA authorizes the use of four classes of WHOPES-recommended pesticides (pyrethroids, carbamates, organophosphates, neonicotinoid and the combination clothianidin / deltamethrin). It additionally authorizes the use of chlorfenapyr (pyrrole class) when recommended by WHO/PQ.</p>	N/A	N/A
<p>b. Procurement and inventory logs must be maintained.</p>	<p>For the 2021 spray campaign, the project procured a total of 38,508 sachets/bottles of insecticides (9,960 SumiShield, 21,060 sachets of Fludora® Fusion and 7,488 bottles of Actellic 300CS) to spray the targeted districts.</p> <p>The project used 38,077 sachets / bottles of insecticide, including 21,075 sachets of Fludora® Fusion and 10,581 sachets of SumiShield in Solenzo and 6,421 bottles of Actellic 300 CS in Kampti. One unit of Fludora Fusion / SumiShield insecticide sprayed approximately 4.5 structures in Solenzo, while a bottle of Actellic 300 CS sprayed 5.1</p>	N/A	N/A

List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
	structures in Kampti. At the end of the spray campaign, the project had zero sachet of both Fludora® Fusion and SumiShield and 1,067 of Actellic 300CS set to expire in February 2023.		
c. Ensure storage facility and personal protective equipment are appropriate for the active ingredient used and in accordance with approved spray operators.	28 storage facilities were refurbished and inspected by the ECO to ensure environmental compliance prior to the start of IRS operations. Appropriate PPE was provided to all staff involved in IRS operations. Central warehouse and site stores were equipped with thermometers, fire extinguishers, spill response kits, wooden pallets, and material safety data sheets. Stores had adequate ventilation, impermeable floors, secured windows, and doors with double locks. All the storage facilities were guarded. Before the distribution of insecticides, all the stores were supplied with adequate personal protective equipment for spray operators, field supervisors, storekeepers, and other casual workers. A dress rehearsal was conducted at each site to ensure there were no issues of mismatches with the personal protective equipment. Each spray operator had at least two pairs of coveralls, rubber boots, neck cover, headlamp, daily supply of face masks, and surgical gloves.	N/A	N/A
d. Distribute insecticides to facilities that can manage such commodities safely in storage, use, and disposal (i.e., in a manner generally equivalent to Implementing Partner’s own spray operators/Waste Management Plan	All sites were inspected to ensure proper management of insecticide storage, use, and disposal. The inspections were based on PMI BMP and took into account sites safety, environmental issues, safety procedures and the conditions of soak pits and rinsing areas.	N/A	N/A
e. Inspect and certify vehicles used for insecticide or team transport prior to contract.	182 tricycles used for transportation during the campaign were inspected and certified according to best practices. Vehicles were equipped with spill kits and first aid kits. They were inspected on May 09, 2021 in Solenzo and May 18, 2021 in Kampti.	N/A	N/A

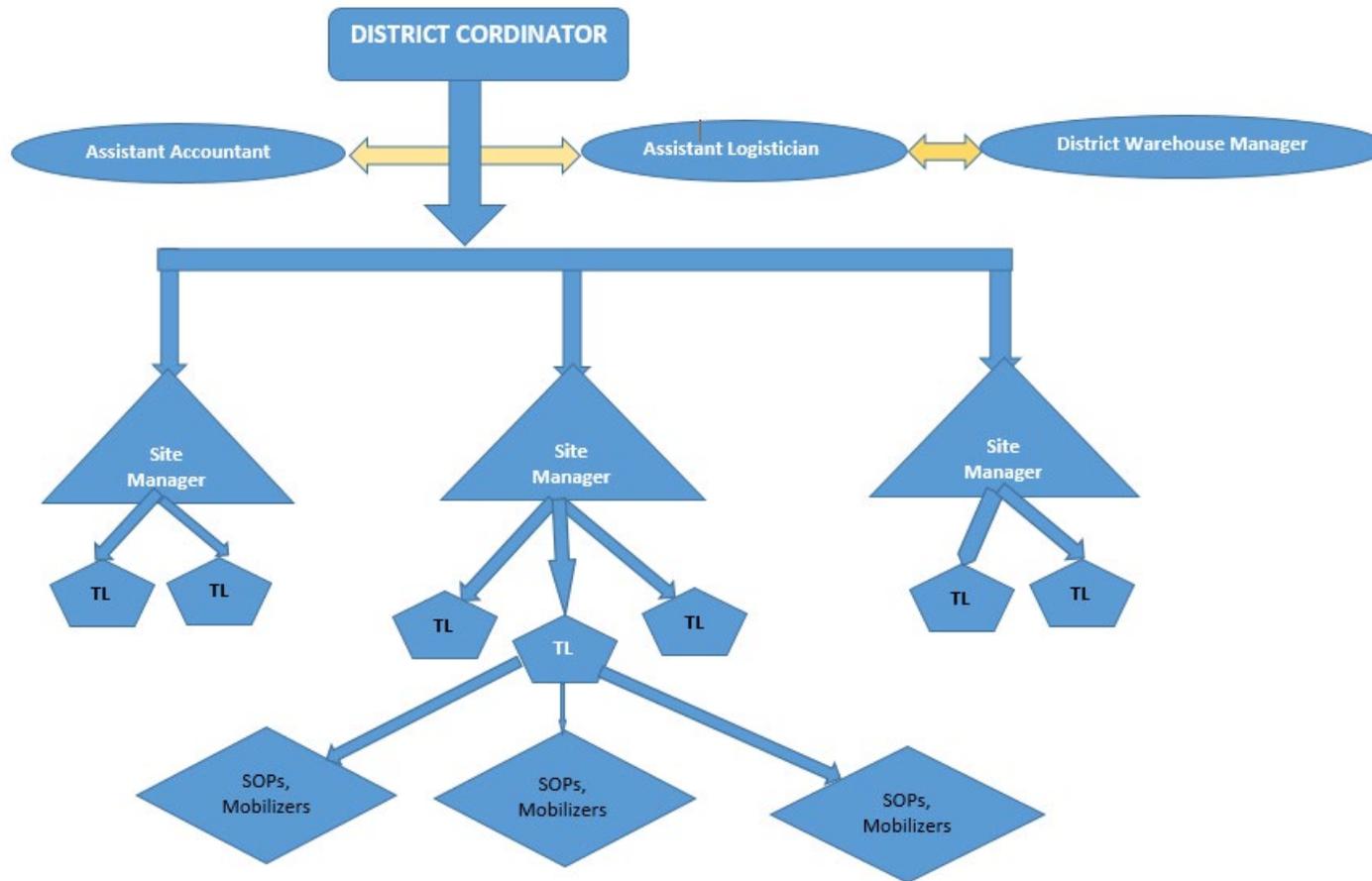
List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
f. Train drivers	Driver training was conducted on May 09, 2021 in Solenzo and May 18, 2021 in Kampti. A total of 186 drivers were trained for the 2021 spray campaign. They were trained to drive safely and wear PPE and not transport food during the spray campaign.	N/A	N/A
g. Ensure availability of cell phone, personal protective equipment and spill kits during insecticide transportation.	All drivers had cell phones as a pre-requisite for hiring and were provided with PPE (boots, gloves, filter mask) and kits after their training and vehicle inspection.	N/A	N/A
h. Initial and 30-day pregnancy testing for female candidates for jobs with potential insecticide contact.	Medical examinations and pregnancy tests were conducted before hiring spray operators, teams leaders, and washers from April 22-28, 2021 in Kampti and May 05-06, 2021 in Solenzo.	N/A	N/A
i. Health test all spray team members for duty fitness.	The health workers checked the physical abilities of all spray team members during recruitment in April-May 2021.	N/A	N/A
j. Procure services of, distribute, and train all workers with potential insecticide contact on the use of personal protective equipment.	All involved workers potentially exposed to insecticides were trained in April-May and were provided with PPE at all operational sites.	N/A	N/A
k. Train operators on mixing insecticides and the proper use and maintenance of application equipment.	The correct insecticide mixing procedure was included in all trainings. Pump technicians were trained on the maintenance of spray pumps and on triple rinsing (May 05-06 in Solenzo and May 03-04 in Kampti).	N/A	N/A
l. Implement Information, Education and Communication (IEC) campaigns to inform homeowners of responsibilities and precautions, including washing itchy skin and going to health clinic if symptoms develop and do not subside.	465 mobilizers and town criers made the community aware of the behaviors to adopt before, during and after the spraying of structures with the support of village leaders, ICPs and other leaders. Two community radios were also used for mobilization.	N/A	N/A
m. Ensure health facility staff are aware of insecticide poisoning management.	75 health workers were trained on intoxication cases including the requirements of MSDS, from April 26 to April 30, 2021	N/A	N/A

List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
n. Storage facilities and transportation vehicles must be physically secured to prevent theft.	28 stores had double locks to reinforce security measures. All stores were guarded by security guards and project staff accompanied the drivers responsible for insecticide transport.	N/A	N/A
o. Maintain records of all insecticide receipts, issuance, and return of empty containers.	Storekeeper performance forms were regularly completed to ensure the insecticide stock records were up to date and to assess the movement of insecticides.	N/A	N/A
p. Conduct analysis comparing number of houses treated vs. number of containers used.	A total of 175,523 houses were treated with 38,077 sachets of insecticides: one sachet of Fludora Fusion treated on average of 4.5 structures, 4.5 structures were treated with one SumiShield 50 WG, and Actellic ® 300CS treated on average of 5.1 structures.	N/A	N/A
q. Examine houses treated to confirm application.	Direct observation of spray (DOS) was conducted by supervisors to assess the quality of spray techniques.	N/A	N/A
10e. Perform physical inventory counts during the application season.	Storekeepers and supervisors were trained to perform physical inventory counts during the campaign.	N/A	N/A
r. For shipments of insecticide over water, sachets/ bottles will be packed in 220 liter open top barrels with a water-tight top and a locking ring, or in a similar durable container. Waterproof labeling must be affixed to the barrel, with the identity of the pesticide, number of bottles inside, the weight, the type of hazard posed by the contents, and the personal protective equipment to be worn when handling the barrel.	PMI VectorLink Burkina Faso did not transport insecticide over water during the IRS campaign.	N/A	N/A

List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
s. Train applicators on the SEA operational requirements, spray operators, PMI BMPs, and approved Waste Management Plan, developed for the safe and effective storage, distribution, application, and disposal of insecticides.	834 SOPs were trained on BMP guidelines and Burkina Faso environmental compliance's laws which included standard operating procedures and the waste management plan.	N/A	N/A
t. Ensure application equipment and personal protective equipment are appropriate for the active ingredient used and in accordance with approved spray operators and maintain equipment to avoid leaks.	SOPs and other seasonal workers wore the appropriate PPE suited for use of Pirimiphos-methyl, Clothianidin and deltamethrin during spraying and clean-up in accordance with approved standard operating procedures.	N/A	N/A
u. Maintain application equipment.	All pumps were packed and stored at the end of each day of spraying according to the standard operating procedures for pump maintenance.	N/A	N/A
v. No application of insecticides within 30 yards of beekeeping sites.	Beekeeping sites and other protected areas were not sprayed.	N/A	N/A
w. Handling, treatment, and disposal of nonhazardous (general waste) and hazardous wastes must be in accordance with the approved Waste Management Plan /spray operators and the PMI BMPs. The WMP, which outlines spray operators for managing waste processes, must be in accordance with PMI best practices and host country requirements	<p>The project has a contract with non-governmental organizations specialized in the management of wastes generated during IRS operations (empty boxes, empty sachets of insecticides, used masks and gloves, etc.).</p> <p>VectorLink signed an agreement with SAPHYTO for the recycling of empty Actellic bottles, incineration of empty SumiShield and Fludora Fusion sachets and other items as needed. The plastic bags from the drinking water are donated to a recycling company, Association Salubrité de Solenzo / Salubrity Association of Solenzo. Masks, chalk, and Goizper pump boxes are given to the same structure for composting.</p>	N/A	N/A
x. Choose sites for disposal of liquid wastes, including fixed and mobile soak pit sites according to PMI BMPs	All soak pits were constructed or rehabilitated in compliance with standards requirements for proper disposal of liquid waste during the campaign.	N/A	N/A

List each Mitigation Measure from Column 3 in the EMMP	Status of Mitigation Measures	List Any Outstanding Issues Relating to Required Conditions	Remarks
y. Construct fixed and mobile soak pits with charcoal according to the BMPs to adsorb insecticide from rinse water.	All soak pits were constructed or rehabilitated in compliance with standards requirements for proper disposal of liquid waste during the campaign.	N/A	N/A
z. Maintain soak pits as necessary during season.	25 fixed and three mobile soaks pits were used during the spray campaign. All soak pits contained charcoal according to BMPs to absorb the insecticide from rinsing water.	N/A	N/A
aa. Monitor waste storage and management during campaign.	Waste management was monitored during the campaign. Contaminated solid waste was stored separately from other waste.	N/A	N/A
bb. Monitor disposal procedures post-campaign	Waste disposal procedure was monitored after the campaign. The contaminated solid waste was removed by SAPHYTO for treatment or disposal.	N/A	N/A
cc. Wastes will only be disposed in incinerators that comply with PMI BMPs Collect and maintain treatment and disposal documents and records on file.	SAPHYTO's incinerator will be used. Incineration certificate will be made available.	N/A	N/A
dd. Country-level USAID EC documentation must contain guidance on proper disposal of wastes	Country-level USAID EC documentation contains guidance on proper disposal of wastes.	N/A	N/A
8. Emergency Response	N/A	N/A	N/A

ANNEX C: SPRAY TEAM ORGANIGRAM



ANNEX D: DCV FORM



Campagne de pulvérisation intra domiciliaire Fiche de vérification des données sur le terrain



Date de vérification: _____ Nom du superviseur: _____ District: _____ CSPS: _____ Secteur/Village: _____

N°	Nom du Chef de Ménage	NOMERO DE STRUCTURE	Statut (Cocher)		Si Non Pulvérisée, Indiquer la raison* (Voir raisons en bas de page)	Date de Pulvérisation ou de non pulvérisation (Date de passage de l'opérateur)	Code de l'Opérateur (qui a pulvérisé la structure)	Code du Mobilisateur (qui a sensibilisé le ménage)	Total des Habitants	Total des femmes enceintes	Total des enfants <5 ans
			Pulvérisée	Non Pulvérisée							
1		LLFLLLLLLI									
2		LLFLLLLLLI									
3		LLFLLLLLLI									
4		LLFLLLLLLI									
5		LLFLLLLLLI									
6		LLFLLLLLLI									
7		LLFLLLLLLI									
8		LLFLLLLLLI									
9		LLFLLLLLLI									
10		LLFLLLLLLI									
11		LLFLLLLLLI									
12		LLFLLLLLLI									
13		LLFLLLLLLI									
14		LLFLLLLLLI									
15		LLFLLLLLLI									

* Raison de non pulvérisation: 1= Malade, 2= Fermée, 3=Funérailles, 4=Refus, 5= Rater, 6= Eligible mais transformée en Grenier/Cuisine, 7=Autres

