



President's Malaria Initiative Support for Indoor Residual Spraying

AFM reviewed the US President's Malaria Initiative (PMI) Fiscal Year 2010 Malaria Operational Plans available at <http://www.fightingmalaria.gov/countries/mops/fy10/index.html> to assess support for indoor residual spraying (IRS) in each of the 15 PMI countries. Below is a summary of the reports along with key information from AFM's 2008 summary for comparison - available at http://www.fightingmalaria.org/pdfs/PMI_IRSWMD2008.pdf. The percent of the population targeted that are at risk was calculated from the population at risk and the population targeted provided in the reports. A list of acronyms is available at the end of this document.

Fiscal Year 2008 PMI countries

Benin		
	FY 2008	FY 2010
Population Targeted	350,000 people (4% of population at risk)	521,738 people (6% of population at risk) +
IRS Budget	\$1.22 million (9% of FY08 PMI budget)	\$7,844,200 (37% of FY10 budget)
Insecticide(s) used	To be determined	Carbamate insecticide (to manage pyrethroid resistance)
IRS Operational Research	Effect of insecticide resistance on impact and efficacy of IRS/ insecticide-treated nets (ITNs)	Not available (N/A)

At the start of PMI funding in 2008/9, Benin had limited experience with IRS. In Year 1 (FY 2008), the PMI began supporting IRS operations by spraying 70,000 houses in Ouémé, covering approximately 4% of the total population at risk for malaria (350,000 of an estimated 8.3 million people). Spraying activities were accompanied by community education. Year 1 activities were closely monitored to determine the best way to expand coverage in subsequent years.

Funding for IRS has increased considerably since 2008, now representing 37% of a \$21 million budget for FY 2010. With this increased funding comes a plan to expand coverage. In FY 2010, two more rounds of spraying will be conducted in the same district, Ouémé, protecting an estimated 521,738 people (6% of the population at risk). After this, no additional rounds will be implemented by the PMI, and IRS activities will move to northern Benin. New target areas will be identified, and one round of IRS prior to the peak of transmission will occur in 2011. The actual number of structures to be sprayed in the north will depend on cost estimates from IRS implementing partners. Therefore estimated coverage for FY 2010 is 521,738 people, plus those covered by spraying in the new target areas.

Evidence of vector resistance to pyrethroid insecticides, noted at the start of PMI funding in Year 1, has necessitated the use of a carbamate insecticide for IRS operations. The PMI will continue, as in Years 1 and 2, to support the national malaria vector surveillance program to monitor resistance and assess the impact of IRS on vector control.

Ethiopia		
	FY 2008	FY 2010
Population Targeted	500,000 people (3% of population at risk)	Difficult to determine (population unknown). 500,000 structures in Oromia (approximately 250,000 households)
IRS Budget	\$3,875,000 (19% of FY08 PMI budget)	8,530,000 (28% of FY10 PMI budget)
Insecticide(s) used	DDT and malathion	DDT
IRS Operational Research	N/A	Research for ongoing investments into larval source management

Ethiopia has a long history of IRS use, and IRS remains a key component of the National Malaria Control Strategy. The Oromia Region of Ethiopia was added to the PMI in 2008/9, with 100,000 households (benefiting approximately 500,000 residents) sprayed in Year 1. The PMI's IRS campaign remains in this region for FY 2010, with approximately 250,000 households (500,000 structures) being targeted. This represents a more than two-fold increase in households targeted from FY 2008. The PMI may also provide partial support for operations in the rest of Oromia, after evaluating the FY 2009 operations. Spraying will still take place using DDT, Ethiopia's insecticide of choice, although there is evidence of resistance to DDT in some vector populations.

The PMI will continue to address key challenges Ethiopia faces in implementing IRS by providing funding for the procurement of equipment and insecticides, building entomologic capacity, assisting in pest management, and providing quality control at the Adami Tulu Pesticide Processing Plant. In addition, the PMI will provide support to help the Government of Ethiopia conduct operations research for the ongoing investments in larval source management, in order to integrate complementary interventions to augment the current IRS programs.

Funding for IRS operations has steadily increased since Year 1, now representing 28% of a total requested budget of \$31 million.

Ghana		
	FY 2008	FY 2010
Population Targeted	500,000 people (2% of population at risk)	900,000 people (4% of population at risk)
IRS Budget	2,335,000 (14% of FY08 PMI budget)	\$6,664,000 (20% of FY10 budget)
Insecticide(s) used	To be determined	Not stated (pyrethroid alpha-cypermethrin used in FY09)
IRS Operational Research	N/A	N/A

Ghana's 2008-2015 National Malaria Control Strategy calls for rapid scale-up of IRS, building on the successful PMI IRS program in the Northern Region and the AngloGold Ashanti (AGA) mining company's program in the Obuasi district. The PMI sprayed five districts in FY 2008, and expanded to six districts in FY 2009, protecting over 708,000 residents. In FY 2010, the PMI will continue to support spraying in the same six districts as in FY 2009 and expand to an additional two districts, protecting over 900,000 persons (4% of the population at risk).

The PMI will also continue providing technical assistance and support for entomologic and insecticide resistance monitoring, as it has done for the past two years. PMI's guiding principle for Year 3 will be to build national capacity and transfer increasing responsibility for IRS operations to the MOH. This will help to pave the way for further scale-up of IRS to one-third of the 138 districts in the country under the recently approved Global Fund Round 8 grant.

The FY 2010 budget for IRS is \$6,664,000, or approximately 20% of the total budget.

Kenya		
	FY 2008	FY 2010
Population Targeted	250,000 households (population targeted unknown)	1.5 million people (6% of population at risk)
IRS Budget	\$4,050,000 (20% of FY08 PMI budget)	\$7,154,200 (18% of FY10 budget)
Insecticide(s) used	ICON, deltamethrin, bifenthrin	Not stated (pyrethroid alpha-cypermethrin used in FY08/9)
IRS Operational Research	N/A	N/A

Kenya has been spraying 16 malaria epidemic-prone districts since 2007 with support from Global Fund Round 4 funding. The PMI has supported IRS activities in two of these districts, as well as in a bordering malaria endemic district since 2008/9.

As malaria has fallen sharply in the highland districts currently targeted for IRS, the DOMC is looking to phase-out IRS in the highland, epidemic-prone districts, and increase IRS activities in endemic districts, particularly those bordering the highlands. Accordingly, in Year 3, PMI will transition out of the two epidemic-prone districts, while expanding its IRS program to a total of four endemic districts (one old, three new), covering an estimated 250,000 houses and protecting an estimated 1.5 million people (6% of the population at risk). This arguably represents similar coverage as provided in FY 2008, however it will be provided in a different area.

The PMI will also support enhanced epidemiological surveillance and monitoring in both highland and lowland districts to provide information that the DOMC can use to make decisions on the best strategy for IRS. The PMI will continue its insecticide resistance monitoring in ten sites in western Kenya and expand to include the new sites being sprayed. The IRS budget for 2010 is \$7,154,200, or 18% of the total FY 2010 budget. This represents a slight decrease in proportional funding for IRS since FY 2008, probably due to a considerable increase in funding for ITNs in order to meet the 2009-2017 National Malaria Strategy goal of universal ITN coverage within prioritized regions of the country by 2010.

Liberia		
	FY 2008	FY 2010
Population Targeted	125,000 people (3% of population at risk)	400,000 people (11% of population at risk)
IRS Budget	\$562,500 (4% for FY08 PMI budget)	\$4,214,200 (23% of FY10 budget)
Insecticide(s) used	DDT and pyrethroid insecticide	Insecticide to be selected by NMCP
IRS Operational Research	N/A	N/A

PMI IRS operations will continue to build on the efforts in FY 2008 and 2009. Prior to the start of PMI funding in 2008/9, spraying operations in Liberia took place primarily in camps for internally displaced persons or returning refugees, covering a population of approximately 150,000. The MOH leadership planned for IRS coverage to eventually reach a large number of the population, but lacked the technical capacity and resources to reach this objective.

PMI thus began by targeting 25,000 households in Monrovia for IRS in Year 1, benefiting approximately 125,000 people or 3% of the estimated 3.77 million Liberians at risk for malaria. IRS coverage over the past two years has grown considerably; funding for IRS now comprises 23% of a total budget of \$18 million, and spraying now covers an estimated 11% of the population at risk. Spraying is currently being done with a pyrethroid insecticide; however, an environmental assessment for the use of DDT for IRS has been initiated at the request of the NMCP.

PMI-supported efforts to develop a database of malaria vector species and insecticide resistance status has been delayed due to the lack of qualified personnel in the NMCP to carry out regular collection and identification of mosquitoes. In FY 2010, the PMI will continue to provide funding to build entomologic capacity at the NMCP.

Madagascar		
	FY 2008	FY 2010
Population Targeted	1.25 million people (7% of population at risk)	2.6 million people (13% of population at risk)
IRS Budget	\$4,263,000 (25% of FY08 PMI budget)	\$9,674,000 (29% of FY10 PMI budget)
Insecticide(s) used	To be determined	Pyrethroid
IRS Operational Research	N/A	N/A

PMI funding for Madagascar began in 2008, following the end of the CRESAN Project (World Bank), which had fully funded IRS campaigns in the past. The PMI supported the continuation of IRS in the Central Highlands by targeting 250,000 households per year for spraying. This was expected to benefit approximately 1.25 million people or 7% of the estimated 18 million people at risk for malaria.

This year (FY 2010), the PMI will work in partnership with the NMCP and Global Fund to expand Madagascar's IRS program in order to move it into the pre-elimination stage. The IRS goal is to

spray at least 80% of targeted structures in 53 health districts (10.25 million inhabitants) for four years (one round/year). This will be followed by targeted IRS in high-risk districts identified using clinical data, backed up by an epidemic response system capable of rapid detection and response to outbreaks. PMI will continue to support IRS in the Central Highlands and fringe districts, with an extension to the western ‘transition’ zone and the South. The PMI will support spraying in thirteen health districts, covering an estimated 2.6 million people, more than double the population covered in FY 2008.

After debate over the best insecticide choice and strategy, Madagascar has settled on pyrethroids as the insecticide of choice. A Supplemental Environmental Assessment for IRS with the pyrethroid alpha-cypermethrin was completed in 2007 while an updated Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) was approved in 2009 to cover the entire class of pyrethroids.

PMI will continue its environmental mitigation measures, as well as expand its support for entomologic monitoring and evaluation. It will also invest in capacity development in the public sector to ensure Madagascar can expand and sustain its IRS operations. Funding for IRS in Madagascar represents approximately 29% of a total budget of \$33.9 million.

Mali		
	FY 2008	FY 2010
Population Targeted	430,000 people (3% of population at risk)	580,000 people (4% of population at risk)
IRS Budget	\$1,664,200 (approximately 11% of FY08 PMI budget)	\$7,784,000 (28% of FY10 PMI budget)
Insecticide(s) used	To be determined	Lambda-cyhalothrin
IRS Operational Research	1) benefits of larvaciding water sources surrounding sprayed households 2) reducing/eliminating mosquitoes in 5-10 hamlets along the Niger River during the dry season and measuring mosquito activity in nearby villages during the rainy season	N/A

In 2008/9, PMI funds supported Mali’s first large-scale IRS campaign in the districts of Bla and Koulikoro, and provided continuing support in 2009/10. This included training of more than 350 sprayers, supervisors and operators, the purchase of all commodities, and communication, supervision, monitoring and environmental compliance activities. The results of Year 1 IRS activities were used to determine the feasibility of continuing and expanding spraying in Mali in subsequent years.

Funding for IRS did continue, and in FY 2010, PMI will continue to support IRS in Bla and Koulikoro Districts and will expand to a third district with an estimated population of 160,000. Altogether, IRS campaigns for FY 2010 are expected to benefit 580,000 people, or 4% of the population at risk. PMI will also continue strengthening the MOH’s capacity to plan and supervise IRS activities.

PMI funding for IRS activities is \$7,784,000 (28% of FY 2010 budget). Currently no Global Fund-

supported or other private sector IRS activities are underway, although Mali recently submitted a five-year malaria application to the Global Fund Round 9 with an ambitious IRS component that expands spraying from 2 to 15 districts.

Zambia		
	FY 2008	FY 2010
Population Targeted	700,000 households (population at risk unknown and population targeted unknown)	Difficult to determine – 1.8 million structures targeted by NMCP in total
IRS Budget	\$4.5 million (30% of FY08 PMI budget)	\$6.25 million (24% of FY10 budget)
Insecticide(s) used	DDT, ICON and alpha-cypermethrin	DDT or pyrethroids
IRS Operational Research	N/A	N/A

IRS has been ongoing in Zambia since 2003, with PMI support beginning in 2008/9. With PMI support, MOH/NMCC sprayed 1.1 million structures in 36 districts of the country’s 72 districts reaching a population of more than 5 million people—this represents over 90% of targeted structures. IRS programs target urban and peri-urban areas, and pyrethroids or DDT are used depending on the type of local construction.

In FY 2010, PMI will support an intensification of the IRS program, and an expansion to 54 districts targeting 1,800,000 structures. This support is contingent upon an evidence-based LLIN/IRS strategy, which the PMI will work with the NMCC to promote. PMI will provide support for procurement of IRS materials, aid the implementation of the program, and work with NMCC to develop a resistance management program that includes entomological surveillance, insecticide resistance testing and insecticide rotation.

IRS in Lusaka and Kazungula (two of the original districts targeted) will be dramatically reduced due to low levels of malaria transmission. In its place, the MOH/NMCC plans to establish pilot programs using an enhanced, case-based surveillance system to inform IRS activities. The PMI team will assist the MOH/NMCC in developing this strategy, to capitalize on the success of IRS interventions.

Fiscal Year 2007 PMI Countries

Malawi		
	FY 2008	FY 2010
Population Targeted	50,000 households (population at risk unknown and population targeted unknown)	134,000 houses (as part of NMCP efforts to protect 2.5 million people)
IRS Budget	\$850,000 (5% of FY08 PMI budget)	\$5,200,000 (19% of FY10 PMI budget)
Insecticide(s) used	To be determined	Pyrethroid
IRS Operational Research	N/A	N/A

In 2007 and 2008, PMI supported a successful IRS pilot in Malawi, covering about 27,000 houses in the northern section of Nkhotakota District. It will support a third round of spraying there in 2009. Based on the success of these efforts, the Malawi MOH has deemed IRS a feasible malaria control strategy in rural areas, and has proposed greatly expanding IRS to a total of seven high-prevalence districts along the lakeshore and in Shire Valley. The strategy will cover 500,000 houses and an estimated 2.5 million people. PMI's role in this expansion of IRS will be to spray the entirety of Nkhotakota District (approximately 53,000 houses) and the adjacent Salima District in 2010, for a total of two of the seven districts scheduled by the NMCP. Accordingly, funding for IRS has increased from 5% of the total budget in FY 2008 to 19% of a \$27 million budget in FY 2010.

In addition, PMI will provide technical assistance to the NMCP for all aspects of IRS in the scale-up districts. The PMI will also continue entomological and insecticide resistance monitoring in and around the targeted IRS area as well as other sites in order to address both ITN and IRS needs.

Mozambique		
	FY 2008	FY 2010
Population Targeted	1.88 million people (10% of population at risk)	2 million people (9% of population risk)
IRS Budget	\$3,135,500 (16% of FY08 PMI budget)	\$8,509,000 (22% of FY10 PMI budget)
Insecticide(s) used	DDT and pyrethroids	DDT in Mocuba District; Lambda-cyhalothrin in other 5 districts
IRS Operational Research	N/A	N/A

Mozambique has been using limited IRS since the 1960s, and expanded spraying with help from the Lubombo Spatial Development Initiative (LSDI). PMI funding for IRS began in 2007/8. In FY 2008, IRS activities were conducted in six districts in Zambézia Province covering more than 412,000 structures and 1.45 million residents. Spray operations for the 2009 spray season are nearing completion and will cover approximately 500,000 structures and more than 2 million residents in the same target districts in Zambézia Province.

An insectary and entomology laboratory in Zambézia Province has been established and new equipment, supplies and reagents delivered. Vector surveillance and insecticide resistance testing is

underway in the six IRS districts. Renovations on the entomology laboratories of the Instituto Nacional do Saúde (INS) of MISAU will be completed in October 2009.

With FY 2010 funds, the same 500,000 structures and 2 million residents in the same six districts in Zambézia Province will be covered with IRS. Although this represents an increase in total population covered by IRS from FY 2008, it is actually a decrease in coverage for the percent of the population at risk – because of a growth in population at risk from 18 million to 21.5 million from 2008 to 2010.

Other PMI activities include capacity building in entomologic monitoring and insecticide resistance testing. The FY 2010 PMI budget request for Mozambique is \$38 million, 22% of this will be used for IRS and vector control activities.

Rwanda		
	FY 2008	FY 2010
Population Targeted	1.9 million people (21% of population at risk)	1.25 million people (13% of population at risk)
IRS Budget	\$6.47 million (38% of FY08 PMI budget)	\$7,113,000 (40% of FY10 PMI budget)
Insecticide(s) used	ICON	Long-lasting pyrethroid formulation (will rotate insecticide if there is evidence of resistance)
IRS Operational Research	N/A	N/A

Although malaria remains a major public health problem in Rwanda, data from the Health Management Information System (HMIS) suggest that the transmission of malaria in Rwanda has decreased significantly in the past few years. Recent progress in malaria control in Rwanda can be attributed to several factors: prompt treatment, an increase in ownership and usage of ITNs, and a successful expansion of Rwanda’s IRS campaign. Declining malaria incidence in some sectors has prompted an adjustment from district-wide coverage to more targeted spraying to reflect localized risks.

Indoor residual spraying has featured highly in malaria control strategies in Rwanda since 2007. According to the FY 2009 Malaria Operational Plan, the MOH and PMI planned IRS in five districts in January 2008; however, constraints due to communication strategies and coordination resulted in the cancellation of this round. Partners collaborated closely to address problems and spray operations in August 2008 appeared to be going well. The most recent round of spraying covered 191,051 houses. In Year 3 (August 2009), PMI will support an expanded spray round to reach approximately 275,000 houses, using a long-lasting insecticide to maximize impact during the highest transmission period and through the second transmission peak early in 2010.

For Year 4 (FY 2010), PMI will continue to support targeted sectors protecting approximately 275,000 houses and 1.25 million people (13% of the population at risk). Additional funds will also go towards supplementing capacity building and providing continued financial and technical support for district-level vector control training, in order to develop IRS oversight capability. The PMI will also continue to support the insectary, insecticide resistance testing, and implementation

of the entomological monitoring plan.

Total funding for FY 2010 is \$18 million, of which approximately 40%, or \$7,113,000 is for IRS.

Senegal		
	FY 2008	FY 2010
Population Targeted	680,000 people (6% of population at risk)	980,000 people (8% of population risk)
IRS Budget	\$3,075,000 (19% of FY08 PMI budget)	\$5,152,000 (19% of FY10 PMI budget)
Insecticide(s) used	Synthetic pyrethroids	ICON 10-CS
IRS Operational Research	Longevity of different classes of insecticides	N/A

Although malaria remains a major cause of morbidity and mortality, Senegal has seen the number of reported cases of malaria drop significantly in the last two years. In 2007, malaria was responsible for one third of all outpatient consultations and 18% of reported deaths. In 2008, it was responsible for only 6% of all outpatient consultations and 7% of deaths. This is due to a change in the case definition of malaria as well as the effects of malaria control programs.

During Years 1-3, PMI conducted IRS in three districts, one in each of the three ecological zones, covering a total population of approximately 675,000 each year. More than 98% of houses targeted by spray teams were successfully sprayed. With FY 2010 funds, PMI will support IRS in the same three districts, and will expand coverage to three additional priority districts, increasing the population covered to approximately 980,000, or 8% of the population at risk.

The PMI will also continue its support in strengthening Senegal's epidemiological and entomological capacity, through the hiring of an additional entomologist to help the NMCP monitor its IRS activities. Additional FY 2010 funds will support activities to transfer IRS capacities and responsibilities from PMI implementing partners to the MOH, which will be useful for the increased IRS activities anticipated under the Global Fund Round 9 proposal.

Fiscal Year 2006 PMI Countries

Angola		
	FY 2008	FY 2010
Population Targeted	Difficult to determine	800,000 (5% of population at risk)
IRS Budget	\$2.15 million (11% of FY08 PMI budget)	\$5,037,500 (14% of FY10 PMI budget)
Insecticide(s) used	ICON-CS	ICON WP and synthetic pyrethroid in Huila Province; long-acting synthetic pyrethroid in Huambo Province
IRS Operational Research	N/A	N/A

In FY 2008, Angola changed its IRS target areas – discontinuing spraying in the Cunene and Namibe provinces due to the low levels of malaria transmission; continuing IRS in the Huila province; and initiating IRS in the Huambo province - a highly endemic area reporting the second highest number of malaria cases annually. Over the past 12 months, PMI in Angola supported the spraying of 135,000 houses in these two provinces, protecting a total population of more than 678,000. With FY 2010 funds, the PMI plans to continue these successful IRS campaigns – targeting upwards of 140,000 houses. At the request of the NMCP, PMI will also spray 20,000 houses in Cunene Province on the border with Namibia, as part of the Southern African Development Community (SADC) Strategic Plan to eliminate malaria in that sub-region. IRS activities for FY 2010 are expected to benefit 800,000 residents, covering approximately 4.5% of the total population at risk for malaria.

In addition, the PMI will continue to monitor the risk of malaria transmission in Huambo Province to allow for better targeting of IRS and LLIN distribution. This will include collecting and identifying mosquito vector specimens and monitoring resistance, as well as strengthening entomologic monitoring capacity within the NMPC. Training for resistance and monitoring of IRS will be provided by the CDC, and will take place after the insectary and laboratory (planned in FY 2009) have been completed.

Tanzania/ Zanzibar		
	FY 2008	FY 2010
Population Targeted	Difficult to determine (IRS plans still in draft form); 147,500 households/ 200,000 households	6.2 million people (14% of population risk)/ 712,000 people (59% of population at risk)
IRS Budget	\$6,695,000 (20% of FY08 PMI budget) – both regions together	\$18,000,000 (35% of FY10 PMI budget)/ \$3,700,000 (7% of FY10 PMI budget)
Insecticide(s) used	ICON	DDT and lambda-cyhalothrin/ Lambda-cyhalothrin (long-lasting)
IRS Operational Research	1) integration of IRS and ITNs 2) quantification of repellent and irritant actions of DDT and pyrethroid insecticides	N/A

Thus far, the PMI has supported three rounds of IRS on the Mainland (protecting 698,122 people), and four rounds of IRS in Zanzibar (protecting 1,085,912 people). IRS has significantly reduced malaria prevalence and deaths attributable to malaria in both areas, and has contributed to advancing Zanzibar into a pre-elimination phase in malaria control.

Activities within the PMI Tanzania Malaria Operational Plan for FY 2010 are described separately for Mainland Tanzania and Zanzibar, since these areas have independent malaria control programs. Funding and targets for both Tanzania and Zanzibar have increased significantly since FY 2008.

Mainland Tanzania

The PMI plans to expand IRS on the Mainland to include 18 districts in the Lake Zone (Kagera, Mwanza and Mara regions), an area with some of the highest malaria prevalence in Tanzania. It will target 1,150,000 houses, protecting 6.2 million people (14% of the total Mainland population). Spraying in the two districts of Muleba (3 rounds IRS) and Karagwe (2 rounds IRS) will continue until the PMI universal LLIN campaign is implemented in late 2009/10. IRS may be stopped after the LLIN campaign if there is sufficient epidemiologic and entomologic evidence to support a scale down in these two districts.

Zanzibar

Although Zanzibar is in the pre-elimination phase, it remains vulnerable to malaria outbreaks. PMI will continue to support IRS in Zanzibar until there is universal coverage of LLINs and surveillance systems are functional and able to detect malaria outbreaks. In FY 2010, the PMI will conduct a fifth round of IRS in eight priority districts, targeting 132,000 structures and protecting 712,000 people (59% of the population at risk). Zanzibar will continue to collect epidemiologic and entomologic data to enable the Malaria Control Program and PMI to make informed decisions regarding the scaling-back of IRS.

Funding for IRS and monitoring activities in both Mainland Tanzania and Zanzibar comprises approximately 43% of the FY 2010 PMI budget, more than double the requested funding in FY 2008.

Uganda		
	FY 2008	FY 2010
Population Targeted	Difficult to determine	2.6 million people (9% of population at risk)
IRS Budget	\$8.52 million (39% of FY08 PMI budget)	\$14,837,500 (42% of FY10 PMI budget)
Insecticide(s) used	ICON-CS	DDT or pyrethroids
IRS Operational Research	N/A	N/A

PMI has supported IRS in Uganda since 2006. The program has grown each year, spraying one district in 2006 and scaling-up to six districts in 2008. To date, over 800,000 houses have been sprayed and nearly three million people protected from malaria in eight districts (two epidemic-prone southwestern districts and six highly endemic northern districts). Acceptance of IRS has remained consistently high with more than 85% coverage.

The proposed FY 2010 PMI budget for Uganda is \$35 million, with 42% (\$14,837,500) being used for IRS and entomological/ environmental monitoring. With this funding, the NMCP will continue to pursue a scale-up of the IRS program in Uganda, building on previous years. In FY 2010, the PMI will continue to support IRS in the six northern districts of Kitgum, Pader, Apac, Oyam, Gulu and Muru, which have the highest malaria transmission rates in Uganda. Approximately 700,000 houses will be sprayed, protecting more than 2.6 million people (9% of the total population at risk).

In 2008, the Ministry of Health obtained approval for the use of DDT from the National Environment Management Authority. A pilot spraying of DDT in districts Apac and Oyam was conducted and met with widespread public acceptance (evidenced by the 93% coverage). However, DDT use in these districts was banned in 2008 by a court injunction launched by organic farmers. This injunction was recently lifted, however an appeal has been filed in the constitutional courts. DDT use would help to address the significant challenge posed by intense, perennial malaria transmission in nearly ever region. However, it remains to be seen whether DDT will be used more widely in the future.

Acronyms

CDC	Centers for Disease Control and Prevention
DOMC	Division of Malaria Control
GF	Global Fund to fight AIDS, Tuberculosis and Malaria
HMIS	Health Management Information System
IRS	Indoor Residual Spraying
ITNs	Insecticide-treated nets
LLINs	Long-lasting insecticide-treated nets
MISAU	Ministerio de Saude (Ministry of Health)
MOH	Ministry of Health
NMCC	National Malaria Control Center
NMCP	National Malaria Control Program
PMI	President's Malaria Initiative
SADC	Southern African Development Community
USG	United States Government