



PRESIDENT'S MALARIA INITIATIVE



## INDOOR RESIDUAL SPRAYING FOR MALARIA CONTROL

# Ethiopia FY 2009 Work Plan

Indoor Residual Spraying (IRS) for Malaria Control  
Indefinite Quantity Contract (IQC) Task Order 1

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Prepared for:  
United States Agency for International Development

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# I. Introduction, Background and Summary of Country MOP

In 2006 the U.S. Agency for International Development (USAID) identified Ethiopia as one of the countries to receive funding under the President's Malaria Initiative (PMI). The Ethiopian Federal Ministry of Health (FMOH), through the National Malaria Control Program (NMCP) and Regional Health Bureaus (RHB), would like to make greater use of a number of effective malaria interventions, including indoor residual spraying (IRS), in order to achieve a significant reduction in the malaria burden in the country. Oromia Regional State, which represents approximately a third of the country's landmass and contributes about a third of the malaria cases reported annually in Ethiopia, was identified by USAID and the NMCP as focus area for PMI support. IRS has a long history of use in Ethiopia and is still a key component of the National Malaria Prevention and Control Strategy. However, shortages of equipment, human resources, and operational funds have led to limited coverage and affected the quality of spraying. Thus, during the 2009 IRS round, PMI plans to support IRS operations, procurements, monitoring and evaluation, and environmental compliance and control in the selected districts of Oromia Regional State of Ethiopia.

For FY 2009, RTI will support IRS activities in four administrative zones of Oromia, including three zones that received PMI IRS support in FY 2008 (East Shoa, Arsi and West Arsi), as well as 3 districts in an additional Zone (West Hararge). A total of 23 districts will be targeted. Through discussions during the district micro-planning meeting held on October 27 to 29, 2008, it was determined that the 2009 IRS campaign will begin on May 15, 2009 with an anticipated 30 working days.

The aim of the IRS intervention will be to lower the malaria incidence and reduce the frequency of malaria epidemics. This is in line with the stated national goal of achieving by 2010, 60 percent of targeted households with IRS and the detection and containment of 80 percent of malaria epidemic outbreaks within two weeks of onset.

RTI International (RTI) is the prime contractor for USAID's Indoor Residual Spraying IQC (IRS IQC). Under the IRS IQC's Task Order One (IRS TO1), USAID has requested that RTI provide technical support to the IRS program in Ethiopia.

This work plan covers the period from January 1, 2009 to December 31, 2009.

## Summary of Accomplishments in FY 2008

Accomplishments for the first round of USAID/PMI-supported IRS TO1 operations in 2008 include the following:

- 316,829 structures representing 91.96 percent of the targeted structures were sprayed.
- The total number of residents in the sprayed structures was 1,000,526 (91.74 percent of people in the targeted structures) of which 161,144 or 16.1 percent were children under 5 years of age, 488,957 or 48.87 percent were female and 12,496 or 1.25 percent were pregnant mothers.

- A total of 1,154 daily laborers (1046 spray operators and porters and 108 washers and guards) were engaged in the IRS operations.
- 306 FMOH staff participated as squad and team leaders, supervisors, and district and zone coordinators.
- 152 people including district and zonal malaria focal persons and environmental health focal persons were trained during the IRS training of trainers (TOT) and in turn trained 839 spray operators and 207 reserve spray operators.
- 36 district health education focal persons received IRS information, education and communication (IEC) TOT and, in turn, trained and oriented 835 community leaders and district political figures.
- The spray campaign was carried out from July 22 to September 2, 2008 in 19 districts in three zones of Oromia.

Several activities from the approved IRS TO1 FY 2008 work plan remain to be completed in the timeframe of this FY 2009 work plan. They are:

- TOT on spray pump maintenance will be conducted in February 2009. Twenty nine MOH staff will participate on the training.
- Mapping and geocoding will be completed in March and April 2009.
- Rehabilitation of Adama Malaria Reference Training Center (MRTC) will be completed from January to April 2009.
- Analysis of samples for environmental monitoring will be conducted from January 2009 onwards.
- Storage sites: In December 2008, RTI, district health offices, and ORHB jointly assessed the needs for the district pesticide storage facilities to meet the minimum WHO/FAO standard before FY 2009 spray round. The contribution from each district has been identified. Additional support to be provided by PMI is included in the FY 2009 budget.

## **IRS TO1/Ethiopia 2009 Goals and Objectives**

The overall goal for IRS TO1 in Ethiopia in FY 2009 is to provide technical, strategic, managerial and operational support to implement IRS in realization of PMI's goal of reducing malaria-associated morbidity and mortality within Oromia.

As indicated in the 2009 Malaria Operational Plan (MOP) for Ethiopia, with direction from USAID/Ethiopia and in collaboration with the NMCP, the Oromia RHB (ORHB) and other Roll Back Malaria (RBM) partners in health and related sectors, RTI will support IRS and other activities aimed to significantly reduce morbidity and mortality in accordance with PMI targets by 2010. Specifically, RTI will:

- Undertake the necessary environmental review and compliance by preparing a revised supplemental environment assessment (SEA) document that will include all classes of insecticides; instituting quality control mechanisms, including at the Adami Tulu Pesticide Processing Plant; and obtaining the necessary endorsements to ensure compliance with the Ethiopian government statutes, WHO recommendations, and US government environmental protection regulations.

- Support the implementation of technically sound IRS activities in targeted areas of Oromia in order to spray 467,291 unit structures and protect up to 1.51 million people from malaria in 2009.
- Continue to strengthen the capacity of the ORHB malaria control structures to enable them carry out proper IRS planning, organization, and management and to undertake safe and effective IRS independently in future. This strengthening will be done through hands-on knowledge and skills transfer to the regional and district staff, through:<sup>1</sup>
  - The inclusion of staff in ongoing training activities (TOT on spraying and pesticide management, IEC, etc.) to improve knowledge in key skill areas
  - The engagement of relevant (trained) staff in field supervision and at various levels of IRS operations
  - Fostering competencies in program planning and evaluation through participation in micro-planning, program review, and post spray stakeholder evaluation meetings
  - Ensuring that roles of the trained staff are gradually and progressively increased in successive IRS operations, with RTI staff providing hands on mentoring and guidance.
- Support entomological surveillance and training to enhance the ORHB's capacity to detect insecticide resistance, track insecticide residual durability, and properly monitor vector population dynamics including changes in densities, species successions, and behavior.

FY 2009 IRS operations will target four administrative zones of Oromia, including East Shoa zone and selected districts in Arsi and West Arsi zones that received support in FY 2008, as well as 3 new districts in West Hararge zone. RTI will continue to work with the ORHB and zonal and district health offices to strengthen the quality of spray operations, improve data gathering and mapping to assist with future targeting of IRS, and monitor the effectiveness of the intervention within the zones.

### **Expected Results**

The aim is to cover at least 467,291 sprayable structures with IRS in targeted areas of Oromia to protect 1.51 million people from malaria during FY 2009.

## **II. Overview of Strategy for IRS Country Support**

RTI is the prime contractor for USAID's IRS IQC. Under the IRS IQC Task Order, USAID has requested that RTI provide technical support to the IRS program in Ethiopia. While RTI is the prime contractor, there are various IQC and national partners with whom RTI will be working.

- Crown Agents Ethiopia, an IRS IQC partner, will assist RTI with procurement of IRS materials and equipment.
- ORHB, RTI's main government regional partner, will assign the majority of human resources required to carry out the spraying. The ORHB malaria control department will

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<sup>1</sup> Time lines for the transfers of these skills are further discussed under relevant sections.

actively be involved in the pre-spray preparation, implementation, and monitoring and evaluation of IRS activities and will document IRS data and findings after spray operations are completed.

- Zonal and district health offices from IRS targeted districts in Oromia will work with RTI staff to develop district-specific activity micro-plans and a schedule of IRS operations and to provide supervisory personnel for IRS activities in target areas.
- RTI will coordinate the formation of an entomological monitoring working group for Oromia by working with relevant partners including the Ethiopian Health Nutrition Research Institute (EHNRI) and Addis Ababa University's Institute of Pathobiology.
- RTI will coordinate with Academy for Education and Development (AED) and the Health Education and Extension Center (HEEC) in the development of IEC and behavior change communication (BCC) materials related to malaria control.
- RTI will also work in collaboration with other relevant government bodies such as the Ministry of Agriculture, National Environmental Protection Authority (EPA), the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and other implementing partners as directed by USAID.

### **III. IRS TO1 Activities**

RTI has developed an effective methodology designed to provide the requisite technical management and operational support to implement indoor residual spraying operations in Oromia. RTI's methodology includes a well managed and country-tailored approach in planning and implementing IRS operations. Technical and operational support will therefore be tailored to address USAID's goal of reducing malaria-associated mortality in the selected districts. Specifically, RTI will achieve this goal by creating an enabling environment at the regional and district levels during the planning and implementation phase.

#### **IRS FY 2009 Operations**

This operational plan follows an analysis of relevant country information, lessons drawn from the FY 2008 operations (through the stakeholder review workshop), and due consultations with PMI/E, NMCP, and ORHB, including joint micro-planning meetings during which the scope of work, timeline for activities, and capacity strengthening components were discussed.

#### **IRS Preparation**

##### **Logistics Planning**

Through a collaborative process with the ORHB and district officials, RTI updated the assessment of material, logistical, and financial support required for the IRS program and associated environmental compliance activities for the FY 2009 operations. A district post-IRS evaluation meeting was held from October 27 to 29, 2008. During the second half of the meeting, the districts participated in a micro-planning exercise for the 2009 IRS campaign. An inventory of IRS equipment at each of the districts was completed and each district determined the workforce required to implement IRS within their district during the coming campaign. The

information compiled from the micro-planning meeting has informed the logistical preparations outlined in this document.

## Environmental Assessment and Compliance

RTI conducted an environmental review that satisfies the regulatory requirements of 22 CFR 216. The environmental assessment (EA) for Ethiopia was prepared in 2008 and received formal approval on June 25, 2008, authorizing FY 2008 operations. Consistent with the provisions of the approval, RTI will update the environmental assessment by March 2009 to cover the FY 2009 operations. The update will document the level of compliance during the FY 2008 operations and, drawing on lessons learnt, detail any additional mitigation measures that may be required to prevent or minimize potential risks to human health and the environment from the use of the selected pesticides for IRS.

As part of the environmental safeguards peculiar to the use of DDT for IRS, concrete evaporation tanks and wash-bay units were built in all IRS operation centers within the project districts. The units served to prevent environmental contamination linked to daily equipment cleaning and ensure complete capture of DDT contaminated waste water. Drawing from field experiences from the FY 2008 operations (distance and transportation difficulties associated with the terrain), needs for 12 additional units have been identified. These units will be established before FY 2009 operations begin.

RTI will conduct a pre-IRS inspection about a before the commencement of IRS operation, in the middle of the operation, and after the spray campaign is completed to make sure that all environmental safeguards are in place and ascertain the level of compliance at each of the target district IRS operational centers.

## Pesticide Selection

The Government of Ethiopia has already formulated an IRS strategic framework covering three classes of insecticides: organophosphates, organochlorides, and pyrethroids. However, the FMOH currently authorizes only DDT (75% WP) for IRS. For the 2009 IRS campaign, DDT will be used in line with the country's IRS guidelines and existing practices. Beginning December 2008, RTI in collaboration with ORBH, has been conducting susceptibility evaluations on the local malaria vector species in 10 sentinel sites to help address the paucity of relevant data. Should the susceptibility evaluations indicate full blown resistance (according to WHO guidelines) in specific areas, the possibility of using malathion in those areas will be fully explored in close consultations with ORHB, FMOH and PMI/Ethiopia. It is noted that the FY 2008 EA covered the potential use of both DDT and malathion. The same is therefore anticipated for the FY 2009 update. The results of the evaluations should also assist ongoing national review of the existing broader country policy on vector control, particularly with regards to the insecticides that will be recommended by FMOH for IRS, as well as the elaboration of national strategy on resistance management.

## Procurement and Logistics

Following the micro-planning meeting in October 2008, with all target districts, RTI has determined the quantity of DDT required for FY 2009 IRS operations. A total of 124,013 kilograms (kg) of DDT is required for 2009 IRS campaign for 23 districts, of which 85,417 kg will need to be procured, as the remaining quantity is available in the stock of the district health offices from 2008 ORHB supply. USAID/Ethiopia will support direct procurement of adequate quantities of insecticide for one round of spraying. Thus the cost of insecticide is excluded from the current work plan budget. RTI will arrange all procurement, shipping, delivery, and storage of other essential materials and equipment, including compression sprayers, personal protective equipment (PPE), other IRS related materials and supplies for entomological surveillance in accordance with USAID rules and regulations and WHO guidelines and specifications.

Based on the micro-planning portion of the post-IRS evaluation meeting, the following items are required in the following quantities:

Figure 1. Quantification of basic inputs.

Parameter	Description	Total
Population	Population residing in IRS targeted communities ( <i>kebeles</i> )	1,511,029
Household size	Average family size is 4.8 people.	314,789
<5 population	16.5 percent	249,320
Pregnancies	3.2 percent	48,353
Sprayable structures		467,216
Estimated sprayable area	89 m <sup>2</sup> on average	42,278,640
Insecticide <sup>2</sup>	DDT 75% WP	85,417 kg
Pumps		197
Spare kits		231
Spray operators		1,163
Team leaders		70
Squad leaders		280
Supervisors	One supervisor per 2 teams	34
District staff		86
Regional coordination	ORHB staff seconded for field support/supervision during spray operations	5
Washers		68
Vehicles <sup>3</sup>		122
Guards		72

<sup>2</sup> To be procured directly by USAID/Ethiopia and therefore, cost not included in the work plan budget.

<sup>3</sup> Apart from needs for IRS spray operations, transportation requirement for IEC operations is also included.

Figure 2. International procurement requirements.

Item	Required	Stock balance	Gap				Total
			East Shoa	Arsi	West Arsi	East Hararge	
Spray Pumps	1584	1334	15	11	17	212	250
8002HSS hardened stainless steel nozzle tips	2676	926	622	340	304	484	1750
Spray pump spare part kits	400	227	85	39	49	58	231
Gloves	4803	626	1914	687	940	636	4177
Reflective Jackets	396	268	43	16	9	60	128
Respiratory Masks	40817	5101	14621	6347	8796	5952	35716
Helmet/Faceshield	2291	1875	66	30	13	307	416
Pregnancy test kits	124	0	63	7	32	22	124

Figure 3. Local procurement requirements.

Item	Zone				Total
	East Shoa	Arsi	West Arsi		
Tents 64		30	27	45	166
Mattresses 30	2	131	86	298	817
Wash basins	75	20	33	22	150
Buckets 77	5	289	374	269	1707
2L jugs	119	53	33	46	251
1L jugs	40	18	11	11	80
25L Jerricans	253	92	128	87	560
3000L Water tankers	6	3	2	6	17
220L barrels	105	53	29	42	229
Funnels 29	1	120	116	190	717
Aprons 75		20	33	20	148
First aid kits	63	23	32	22	140
Boots 26	3	131	46	318	758
Coveralls 40	9	163	48	636	1256
Tools set (Wrenches 10", Spanner, Pliers, Screwdriver)	127	46	64	64	301



## Pesticide Management

In accordance with the EA, RTI will implement a strict chain-of-custody system of pesticide management to ensure that all insecticide is accounted for at every step of the program implementation process. To improve accountability, RTI has negotiated with Adami Tulu Pesticides Processing Plant to include district specific codes on the labels of DDT sachets. Storekeepers and district supervisors will receive training on insecticide tracking and record keeping. All empty sachets will be collected at the end of each day and double checked against distribution records at the start of the work day.

*District pesticide storage:* The lack of adequate storage facilities in the districts has been identified as one of the major constraints of the IRS program. RTI, together with the Districts Health Offices and the ORHB, has evaluated needs to upgrading the pesticide storage in the districts to FAO/WHO recommended standards. The assessments identified contributions each district will make towards the upgrades, as well as the support that will be provided through the PMI/IRS operations. The latter has been included in the FY 2009 budget.

*Waste storage:* In previous discussions with the management of Adami Tulu Pesticides Processing Plant, the factory expressed the ability to take back DDT waste including empty sachets, cartons, and other contaminated materials. However, the factory wanted a firm assurance of final disposal plans and the establishment of a dedicated central waste storage facility as preconditions to taking back the waste. Thus, although all the empty sachets and cardboard boxes have been retrieved, they are currently being held by the districts in less than desirable conditions. The situation is bound to be compounded further by the accumulation of waste generated from the FY 2009 IRS operations. In consultation with PMI/Ethiopia, RTI has reallocated \$50,000 from the FY 2009 MOP for improving the quality control of DDT production at the Adami Tulu Pesticides Plant to the establishment of a central waste storage facility. The required quality control improvements (the inclusion of district specific codes to improve accountability and improved packaging to prevent sachet rupture during transportation and field use) were jointly identified by RTI and the plant. These improvements can be achieved by the plant at no cost to the IRS program. The most realistic option available is to establish a storage facility on the grounds of the plant, as there are no suitable storage facilities currently available elsewhere. This option will however require specific waivers from USAID. RTI will continue consultations with PMI/Ethiopia and the USAID/W IRS TO1 CTO to find a workable solution in the shortest possible time, to address this pressing problem. Until such a time that this storage facility is available at Adami Tulu Pesticides Processing Plant, RTI will rent a central storage facility in Adama to contain DDT waste materials from the districts.

## IEC/BCC Development and Implementation

Prior to the PMI-supported IRS program, there had been no well planned and organized IEC/BCC campaign specific to IRS activities. In the first round of PMI-supported IRS operation, *kebele* political leaders, community representatives, and administrative structures were used to disseminate IRS key messages. This strategy was complemented by posters and leaflets. As part of the preparations for the FY 2009 operations, RTI held discussions on an IEC/BCC strategy with regional, zonal and district health officers during the district micro-planning meeting. A

follow up consultation will be held with other in-country partners (AED, Faaya Integrated Development Association [FIDA] and HEEC) to develop specific IEC/BCC materials and formulate a coordinated IEC/BCC campaign that will include:

- Community sensitization and mobilization by community malaria agents and health extension workers (HEWs);
- Radio spot messages using three radio stations; and
- Television spot message on the national television station.

RTI will support the ORHB in IEC/BCC and community mobilization by carrying out effective community mobilization campaigns to increase the promotion of IEC for spraying activities. These activities will be aimed at educating communities on how to prevent malaria, what IRS is and its role in malaria prevention, its benefits and risks, and proper procedures for safety and community participation. A key message that will also be delivered will be in regards to the re-plastering of houses and the length of time home owners should wait before undertaking this activity if needed. Sensitization messages will be disseminated throughout the target communities beginning one month prior to spray activities in the target district and will continue throughout spray operations. The development of the IEC messages and operations will be coordinated with relevant local partners (such as AED and the local IEC/BCC task force) to harmonize messages and minimize duplication of efforts. The campaign will begin with radio and TV spot messages ahead of the door-to-door campaign and will be supplemented with 50,000 posters and 350,000 leaflets. Two weeks prior to the spray activities, door-to-door IEC activities will be initiated in the targeted communities including in all primary and secondary schools and in community based organizations (CBOs) (primarily *kebele* women's associations). HEWs will play an active role in consolidating the messages. The IEC/BCC campaign will also include pre and post-spray assessment to ascertain how IRS is perceived and how to better target communication and outreach prior to and during the spraying exercises.

## **Training**

As a part of the PMI capacity building objective, RTI will conduct a TOT for national and districts level personnel from relevant ministries and partners. The purpose of this activity is to create a cadre of people with sufficient skills to oversee quality IRS from planning to implementation, including monitoring and evaluation. The TOT is also aimed at sustaining quality IRS as part of the national FMOH arsenal of malaria prevention interventions.

RTI will involve national, regional and district officers in the training, including but not limited to:

- NMCP/FMOH
- Regional NMCP
- District team members
- District environmental health officers
- District public health nurses/district malaria focal person
- Zonal or sub district in-charges
- Disease control officers
- EPA.

Following training, this team is then charged with the responsibility of undertaking the training of spray operators. Training of spray operators takes place at the various districts. The training sessions ensure that spray operators are well equipped in application techniques, environmental compliance, use and maintenance of spray equipment, and the principles of community mobilization, safety of personnel, and environmental and community member safety. Specific topics of the hands-on training sessions include: general malariology, IRS, IEC/BCC, IRS safety and personal protection, data collection, PPE, household preparation, equipment preparation, mixing, handling and spray techniques, procedures after spraying, disposal of remaining insecticide and empty sachets, maintenance of pumps, and troubleshooting. Following the general IRS training, they will be assigned different specialized roles and responsibilities and may receive additional orientation for these specializations. All RTI personnel, IEC/BCC implementers, spray operators, washers and other district level support staff will be given intensive training and orientation on all IRS operations.

IRS operations will commence after the training of spray operators and final selection of spray operators (preferably with 2 weeks of IRS training).

As part of this capacity building objective, RTI will involve FMOH and NMCP officials throughout the entire IRS program for planning, implementation, capacity building (such as TOT), supervision, and monitoring. Detailed roles and responsibilities of RTI and FMOH/NMCP are referenced in the scope of work for Ethiopia IRS activities, the EA for IRS operations in Ethiopia, and the Memorandum of Understanding between the ORHB and RTI.

*Poison Management:* RTI will collaborate with NMCP and FMOH to conduct training on the management of pesticide poisoning for 22 clinicians and other health workers serving at health facilities within the IRS operation areas (one from each district). The training will focus on early identification and management of pesticide-related emergencies. District reference hospitals or health facilities will be identified and designated to handle incidents associated with IRS.

A spray pump maintenance TOT will be held in February 2009 in collaboration with FMOH and external STTA. Twenty nine MOH staff will be trained. Training will subsequently be cascaded to all IRS project districts.

## **Indoor Residual Spraying Operations**

RTI and its partners will provide operational support for IRS implementation, including all aspects of training, logistics, supervision, monitoring, and quality assurance. RTI will assist the ORHB in implementing an efficient IRS program with quality control measures in conformity with WHO and other international guidelines. Twenty three districts in four zones (East Shoa, Arsi, West Arsi and West Hararge) in Oromia will receive PMI IRS support in FY 2009 (Annex 2). RTI will engage Ethiopian staff as necessary to collaborate with ORHB staff to oversee the work of the IRS teams on the ground. The program will also receive technical, logistical and administrative back up from RTI's Nairobi and Washington DC project offices. The following activities will be conducted in support of day-to-day operational management.

## Mapping of IRS Structures

Mapping of IRS structures within the target districts was planned in FY 2008 to be undertaken along with the IRS operations. However, as a result of time constrain, particularly with regard to the procurement of PDAs and training pertinent to mapping, the activity could not take place as planned. A pilot activity will now be undertaken in March and April 2009 in two districts in East Showa and one district each in Arsi and West Arsi zones. The pilot will be in collaboration with other partners (FMOH and the Malaria Control and Evaluation Partnership in Africa [MACEPA]) and CDC to improve the planning, monitoring and evaluation of implemented IRS activities. It is anticipated that all structures will be mapped using personal digital assistants (PDAs) and geographical information systems (GIS) in pilot districts. District health offices staff and health extension workers will be trained on supervising and carrying out the geocoding.

## Organization of Spray Teams

In collaboration with the ORHB, RTI will support the organization of spray teams to ensure the effective implementation of IRS activities and adequate safeguards to prevent pilferage of insecticides for non-vector control uses. RTI intends to work with the ORHB to maintain a staffing structure where team leaders and direct supervisors of spray operators are permanent ORHB employees (such as malaria control, environmental health officers and HEWs at district level) who would be accountable for IRS implementation and any misconduct that may happen during field operations.

Through IRS TO1, RTI will also support entomological training for district malaria officers and environmental health workers to strengthen their capacity for entomological surveillance at district level, especially in those districts selected as entomological sentinel sites. Additionally, RTI will provide field training opportunities in the form of “learning by doing” to district officials such as district environmental managers and district malaria control workers on environmental monitoring and entomological surveillance.

## Implementation and Supervision

RTI will intensively collaborate with the ORHB to successfully implement IRS activities according to the plan of action developed during the micro-planning meeting, which will include continuous supervision of spray teams, liaison with the population and local leadership, on-the-job training, as well as ensuring that the operational support to successfully complete IRS activities is made available. During spray operations, RTI will provide financial support to the district health teams for the payment of daily rates of spray operators, guards and other seasonal workers, as well as per diem for government employees tasked with IRS roles.

Each district health office will identify one or two operational sites with an attached permanent camp site from which IRS operations for the district will be managed. Each operational site will house an evaporation tank for proper disposal of DDT waste water. IRS squads will be transported to and from district operational sites at the beginning and end of each work day. Each operational center will consist of wash areas and insecticide and equipment storage areas suitable to the needs of the squads.

RTI will ensure that monitoring is a continuous process with the purpose of correcting actions through planning to enhance program performance.

## **Special Activities**

### **Entomological Surveillance**

RTI and its partners have agreed on the entomological surveillance sentinel sites in selected districts of Oromia. RTI initiated vector density evaluations in July 2008 to establish an entomological baseline before the commencement of IRS operation. This evaluation was carried out with the assistance of district health entomology technicians under the guidance of the RTI/Ethiopia entomologist. Monthly monitoring is being done and the results show propensity for outdoor biting (exophagy) among local malaria vectors although there is still significant (indoor biting) endophagy. There seems to be more vector entry into sprayed structures shared by domestic animals and people compared to those inhabited by people alone. These findings need more comprehensive evaluations to ascertain any variation in the effectiveness of IRS within these two types of structure utilization. Vector susceptibility evaluations could not be undertaken prior to the FY 2008 IRS operations due to difficulties in procuring the needed test materials. In collaboration with the ORHB, RTI finally initiated vector susceptibility evaluations in December 2008. Susceptibility evaluations will continue and expand to all 10 sentinel sites in FY 2009. The results obtained should inform the update of the FY 2008 environmental assessment document for FY 2009 operations, future selection of insecticides, and the development of a realistic resistance management strategy.

RTI will provide technical assistance and training for zone and district health professionals who will be involved in the entomological work, supply all the necessary entomological equipment for the sentinel sites, and co-coordinate and lead the entomological surveillance. The entomological surveillance should include (but should not necessarily be limited to) monthly monitoring of larval and adult mosquito densities and species composition, wall bioassay tests to evaluate the residual efficacy of insecticides using a susceptible colony of the vector, and yearly monitoring of insecticide susceptibility using both F1 generation of field collected mosquitoes and susceptible strains for the three main classes of insecticides in 10 entomological sentinel sites. Data on the resting and feeding habits of the vector species will also be collected. RTI and its partners (the ORHB, Addis Ababa University Institute of Pathobiology, EHNRI), supported by CDC, will provide sufficient entomological information to guide in-country vector control measures.

Through IRS TO1, RTI will support entomological training for district malaria officers and environmental health workers to strengthen their capacity for entomological surveillance at district level, especially in those districts selected as entomological sentinel sites. Additionally, RTI will provide field training opportunities in the form of “learning by doing” to district

officials such as district environmental managers and district malaria control workers on environmental monitoring and entomological surveillance.

### Support for Quality Control and Environmental Compliance at Adami Tulu Pesticides Processing Plant

RTI and Adami Tulu Pesticides Processing Plant management discussed quality improvement needs linked to the DDT production. The communicated needs were related to improving the tracking of DDT sachets by including unique identifier codes and improving quality control of the DDT packaging to prevent the occurrence of torn sachets in supply boxes. The plant indicated its inability to provide consecutive numbering for all the sachets produced due to limitation of technology. It was therefore agreed that RTI will provide the plant with the DDT quota for the various districts, as this will enable the plant generate unique batch codes for each district instead. This change will be done at no additional cost to the program. The plant also will improve the post packaging inspection to ensure that damaged sachets are completely excluded from supplies to the program. As a separate activity not covered under this work plan, the USAID-supported Integrated Vector Management II (IVMII) Project will assess the feasibility of establishing an incinerator in Ethiopia in March 2009 to provide a permanent solution to the disposal of IRS waste (empty sachets and other DDT contaminated materials).

### Rehabilitation of Adama Malaria Reference Training Center

Following a needs assessment conducted by RTI, as well as discussions with PMI/Ethiopia and the ORHB, RTI will rehabilitate and equip the Adama MRTC, including the training and entomological laboratories, insectary, animal house, and storage facilities. Operational systems for the use of the facilities will be reviewed and established in conjunction with the ORHB and PMI/E, and MRTC staff trained in their use. The needs assessment was performed in FY 2008, however, rehabilitation activities will begin in FY 2009.

RTI also plans to hire an entomologist and IRS expert as MRTC coordinator who will be based at the Adama MRTC to oversee the rehabilitation and work with the MRTC team and coordinate entomological activities and trainings.

### Environmental Monitoring of DDT

The environmental monitoring of DDT will enable the validation of best practices and assist in the verification of any environmental outcomes resulting from IRS operations. Opportunities will be provided to strengthen country capacity to undertake sampling and analyzing exposure concentrations from insecticides used for IRS. The monitoring program will continue to focus on agricultural products and environmental exposure pathways. The analysis of the baseline samples collected during the FY 2008 season will be done from January 2009 onwards and the results shared with PMI/E, ORHB, FMOH, and EPA. Consistent with the environmental monitoring frame outlined in the EA, RTI will undertake new (and same site) sampling and analysis prior to the start of FY 2009 operations to ascertain any changes that may have occurred since the 2008 sampling.

## **Medium/long term sustainability and capacity building strategy**

Preceding sections of this work plan outlines ongoing support to strengthen the technical and institutional capacities for sustainable and efficient IRS operations-These efforts encompass improving the competencies and skills of staff within the malaria control bureaus and offices, together with complementary efforts to strengthen supporting infrastructure for IRS in particular, and for malaria vector control in general. This includes:

- Rehabilitation of MRTC, including enhancing laboratory capacity for entomology and hands on training on core entomological functions
- Establishment of district pesticide storage facilities and training of various categories of pesticide handlers, as well as the establishment of a verifiable system of pesticide management including waste retrieval and secure central storage and management of waste
- Facilitating efforts by national stakeholders in establishing a harmonized modalities for IRS/vector control related IEC/BCC

RTI and its partners at the ORHB will develop increased operational capacity at the regional, zonal and district levels to conduct safe and well-managed IRS programs in the future. RTI will utilize a mentoring and TOT approach to develop increased operational capacity within the program and increase technical skills of regional, zonal and district level staff. Attachment 5 outlines the RTI goal to progressively increase the role and responsibilities of ORHB and DHOs in the IRS operations.

## **IV. Management Plan**

At the end of each IRS cycle, a post spraying campaign evaluation meeting is held involving all key partners in the last IRS round. As stated above, the purpose of the meeting is to share the lessons learned and to determine which of the IRS activities will continue to require RTI support to the ORHB or other local partners. Through joint discussions on the transitioning of IRS responsibilities as regional capacity is strengthened, IRS activities will be transferred to the ORHB and other local partners and the MOU between RTI and the ORHB amended to reflect such changes.

RTI has established an effective and efficient management structure in Ethiopia to implement the IRS program with quality control measures and in conformity with international standards as described in WHO guidelines on IRS. RTI currently has a chief of party (COP), a technical specialist for entomology, a finance manager, and a logistics officer based in Addis Ababa. Efforts are advanced to recruit an environmental specialist and a monitoring, evaluation and information management specialist. RTI also plans to hire entomology assistants, project/administrative assistants, and an MRTC coordinator. The additional entomology assistants are required to enable the full scope of entomological surveillance required in all the ten sentinel sites. The sentinel sites are located far apart to adequately represent the different eco-

epidemiological settings in Oromia. In addition to the IRS project sites in four zones, there are sentinel sites in Jima, Ilubabor, and East Wollega about 350 to 600 km from Addis Ababa in the Southwest. The East and West Hararghe sites are 300 to 550 km away. The MRTC coordinator will be based out of Adama and will work closely with the entomology team at the MRTC and the RTI technical specialist for entomology to facilitate the coordination of entomological activities between the various partners, including EHNRI and the Addis Ababa University Institute of Pathobiology.

RTI's COP will be the principal point of contact with PMI and will bear ultimate responsibility for all project management tasks, including quality and cost control, performance monitoring, reporting, and client relations. The rest of the RTI team will aide the COP in ensuring effective and timely implementation of the 2009 IRS campaign and related activities.

During the spray operations, RTI will hire temporary staff at the zonal level to assist with the implementation of activities. Building on the structure that was put in place during 2008, RTI plans to hire zonal finance assistants to coordinate daily rate and per diem payments to IRS personnel. East Shoa will be handled by two finance assistants and Arsi and West Arsi will be supported by one finance assistant each. In addition, four temporary logistics assistants will be hired-one to support the logistical operations in each zone.

RTI intends to recruit Ethiopian nationals for all in-country positions. RTI will work to ensure that each level within the IRS structure is connected with counterparts within the federal government. The COP will interface with top level staff at ORHB, NMCP, and other federal agencies, while other technical staff will work directly with zonal and district health offices, environmental coordinators, local government leadership, and other sector level site managers. The home office technical manager (HOTM) will provide home office backstop functions. The in-country team will also receive technical and administrative support from RTI staff in Nairobi and Washington DC.

### Strategic Technical Assistance Plan

The Ethiopia IRS program will be supported by RTI staff in the Nairobi regional office, as well as the US-based home office as shown in Table 1 below.

Figure 4. Strategic technical assistance plan.

Name	Coming from	Tasks to be undertaken or activities to be supported	Number of visits
Jacob Williams	USA	Technical and administrative support under the role of home office technical manager to include work plan and budget development, project management and operations assistance, including technical support to training and entomological evaluations and post-IRS stakeholder evaluation meetings	3
John Chimumbwa	Nairobi	Technical support under the role of technical director for the IRS program to include key national technical meeting attendance	1
Catherine Ngugi	Nairobi	Operational and logistics support under the role of operational manager for the IRS program to include logistical and operational assessments	1



Name	Coming from	Tasks to be undertaken or activities to be supported	Number of visits
Sam Mesfin	Nairobi	Financial management support under the role of finance controller for the IRS program	1
Autman Tembo	Nairobi	Undertake pre- and mid-spray environmental compliance inspections and reporting under the role of environmental compliance inspector for the IRS program	2
Judith Tukahirwa	Uganda	Undertake training and sample collection for ongoing environmental monitoring activities	1

## V. Monitoring and Evaluation

The core IRS indicators are:

- IRS coverage, or the proportion of sprayable structures found by spray operators which were actually sprayed;
- Capacity building, or the numbers and types of personnel trained in IRS; and
- Population protected by IRS, or the number of people sleeping in structures that have received IRS.

RTI will implement a monitoring and evaluation component for IRS operations. RTI will review indicators, methods, and data sources for monitoring and evaluation of IRS operations with CDC, USAID and FMOH/NMCP according to the following performance monitoring plan.

Figure 5. FY 2009 IRS M&E Matrix.

Objective/ Result	Indicators (by technical intervention)	Source/ Measurement Method	Frequency	Baseline Value	Year 1 Target	EOP Target *
The occurrence of malaria epidemics in IRS targeted communities prevented	% unit structures sprayed	IRS operation daily records	Once yearly	60%	91%	100%
	% population protected or living in sprayed structures	IRS operation daily records	Once yearly	60%	91%	100%
	% pregnant mothers protected in the target community	IRS operation daily records	Once yearly	??%	39%	80%
	% under 5 years of age protected	IRS operation daily records	Once yearly	65	89.5%	100%
Raised community awareness and acceptance of IRS	Proportion of households mobilized on IRS before or during IRS operation	Assessment report	Before and after IRS operation			100%
	Proportion of respondents with correct understanding of the purpose of IRS	Assessment report	Before and after IRS operation			100%
	Proportion of households that heard the message not to replaster the sprayed structures within six months after spray	Assessment report	Once after spray			100%
	Proportion of households that replastered the sprayed structures within three months	Assessment report	Once after spray	30		2%
	Proportion of households that correctly understand the environmental risk and complied with safety measures	Assessment report	Before and after IRS operation			100%
	Proportion of elementary and high schools covered by printed IRS IEC messages	Assessment report	Before and after IRS operation			100%
Human and environmental safety maximized	% IRS operators wear PPE correctly	Report from direct IRS operation observation	Once a year	NA	80%	100%
	% IRS operators correctly following technical procedures of spraying	Report from direct IRS operation observation	Once a year	70%	85%	100%
	Proportion of district store keepers trained on insecticide handling	Records of training	Once a year	NA		100%
	Proportion of district stores accurately reporting balance of insecticide supervision	Report from direct IRS operation observation	Once a year	NA		100%
	% of squad leaders daily account for the insecticide used and empty sachet returns	Report from direct IRS operation observation	Once a year	NA	100%	100%

## Operational Indicators

With regard to operational achievements, RTI will ensure that the recommended dosages of insecticides are used, that the quality of the insecticides are the required standard, that the percentage of structures sprayed in relation to the targeted number of structures are adequate and that the insecticide is applied at the appropriate time in relation to the onset of malaria transmission. Ethiopia's New Year coincides with peak transmission of malaria and most Ethiopians are presumed to plaster their houses for the holiday. If the proportion of structures replastered after spraying is relatively high, it is very clear that replastering negatively affects the outcome of the intervention. Hence, from randomly selected IRS villages, every ninth or tenth structure will be checked for re-plastering.

The following quality management indicators will enable improved program efficiency:

- Average time the family/goods remain outdoors following IRS application;
- Percentage of households in which residents sweep the floor upon reentry following IRS;
- Percentage of households in which a respondent reports accurate knowledge of IRS messages;
- Percentage of operators who fully implement best practices (*%FC*);
- Number of storage facilities from which the Logistics Manager has received a current Storekeeper's Weekly Report;
- Number of IRS IEC materials printed and disseminated in the target communities;
- Number of children under 5 residing in structures sprayed with a residual insecticide;
- Number of pregnant women residing in structures sprayed with a residual insecticide; and
- Percentage of sampled structures with re-plastered walls within three months of IRS

## Entomological Indicators

Entomological surveillance will be carried out to assure the impact of IRS activities, assess insecticide susceptibility, and monitor vector density and behavior over time. RTI will collaborate with CDC and appropriate in-country entities, organizations and academic institutions to deliver these services (such as ORHB, Adama MRTC, Addis Ababa University Institute of Pathobiology, and EHNRI).

RTI will maintain records of program performance which will demonstrate adherence to WHO technical standards quality of training and supervision, procurement activities, and environmental compliance including environmental monitoring.

Entomological indicator data to be collected during entomological surveillance will include:

- Proportion of gravid and half gravid mosquitoes collected from sprayed houses to total female mosquitoes collected;
- Average number of mosquitoes collected per house per night or per house per one person bait as compared to pre-spraying time within the same village and compared with non-sprayed village;
- Proportion of vectors biting indoors and outdoors;
- Proportion of vectors feeding on humans from blood index;

- Percentage of vectors rested indoors compared to indoor man landing or CDC light trap collection;
- Larval density per 100 dips comparing sprayed and unsprayed villages;
- Number of insecticide resistance tests done;
- Number of bioassay tests performed; and
- Number of villages surveyed for vector population.

The entomological monitoring plan was developed during Jacob Williams' November visit to Ethiopia and has already been shared with PMI/E.

### **Post-spray Assessment**

Following successful operations on the ground, each zone will carry out an in-depth assessment of IRS activities involving districts, local government leadership, and all other stakeholders. Lessons learned, challenges, and key outcomes in terms of coverage and impact of the last cycle will be reviewed. The key outcomes will then be shared with zonal regional and national levels during the post-spray evaluation meeting. The findings and conclusions will inform the recommendations by the follow-up district micro-planning session to improve planning and logistics in the subsequent IRS operations.

### **Output**

RTI will prepare the following reports:

- Pre-operational period: updated SEA;
- Post-operational period: end of round spraying performance report.

## Attachment % District Details

Zone	District	Kebele		Unit Structures		Insecticide			Population in targeted kebeles
		Kebeles in district	Kebeles targeted for IRS in 2009	Unit Structures	Average surface area (m2)	DDT required (Kg)	DDT at hand	DDT to be procured	
East Shoa	Adama	46	27	30,387	67	5,973	1,926	4,047	63,893
	Adea	27	16	19,012	72	4,016	6,869	0	63,766
	Adami Tulu	47	43	31,225	110	10,077	792	9,285	126,492
	Akaki 28		17	11,833	72	2,499	0	2,499	33,856
	Boset 42		24	23,575	67	4,634	531	4,103	57,932
	Bora	19	17	12,328	110	3,978	406	3,572	42,068
	Dugda	39	20	21,510	110	6,941	4,533	2,408	58,261
	Fantale	31	27	18,473	102	5,528	1,772	3,756	69,733
	Gimbichu	35	9	2,600	72	549	414	135	6,282
	Lume 38		18	16,063	72	3,393	3,005	388	33,890
Liben Zikala	19	18	21,343	72	4,508	4,320	188	69,807	
Arsi	Dodota 15		13	17,691	87	4,515	3,210	1,305	43,258
	Jeju 29		13	10,158	86	2,563	1,070	1,493	31,575
	Merti 21		17	20,500	86	5,172	826	4,346	60,796
	Sire	17	9	8,779	87	2,241	984	1,257	24,000
	Z/Dugda	30	30	21,547	102	6,448	2,825	3,623	74,583
West Arsi	Siraro 26		20	25,572	97	7,277	2,396	4,881	96,635
	Shalla 40		30	21,803	97	6,204	1,926	4,278	94,711
	Shashemane	40	22	25,795	97	7,340	1,906	5,434	117,033
	Arsi Negele	48	27	34,295	97	9,759	1,733	8,026	111,963
West Hararge	Miesso	46	30	26,492	96	7461	300	7161	84,777
	Chiro	27	20	30,310	104	9243	289	8954	93,963
	Anchar 47		13	15,925	96	4485	207	4278	51,755
<b>Total</b>		<b>757</b>	<b>480</b>	<b>467,216</b>	<b>89</b>	<b>124,804</b>	<b>42,240</b>	<b>85,417</b>	<b>1,511,029</b>

## Attachment & Ethiopia Implementation Plan and Timeline

For period from January 2009 to December 2009

Component	Activity	Person/ partner Responsible	Project Month												Key Milestones		
			J	F	M	A	M	J	J	A	S	O	N	D			
<b>Complete FY 2008 pending activities</b>	Training of trainers on spray pump maintenance	NMCP, ORHB, RTI		X													MoH staff trained on pump maintenance
	Mapping, geocoding of household structures for IRS	NMCP, ORHB, RTI			X	X											Structures and villages mapped and geocoded
	Rehabilitation of Adama MRTC	ORHB, RTI, CA	X	X	X	X											Rehabilitation of MRTC completed
	Environmental monitoring sample analysis	RTI	X	X													Result of sample analysis obtained
<b>Assessment</b>	Conduct Supplemental Environmental Assessment	RTI			X												Supplemental assessment done
<b>Procurement and Logistics</b>	Building remaining evaporation tanks	RTI, CA, ORHB	X	X	X												Evaporation tanks construction completed
	Procure insecticide	RTI/FMOH/USAID		X													Insecticides purchased
	Develop technical specifications for equipment	RTI	X														PPE and IRS equipment received and distributed to districts
	Release tender notice for procurements	RTI, Crown Agents		X													
	Review and select vendors	Crown Agents		X													
	Receive PPE, and IRS equipment	Crown Agents, RTI			X												
	Identify and rehabilitate district storage and warehouses	RTI, OHB, DHO		X	X												District stores rehabilitated
	Transport equipment and materials to storage facilities	RTI, Crown Agents			X	X											IRS equipment and insecticide transported to districts
	Transport insecticide to district storage areas	RTI, Zonal health offices			X	X											
	Train storekeepers and district supervisors on insecticide tracking and record keeping	RTI				X											All district store keepers trained on insecticide handling
	Arrange and oversee transportation of IRS personnel, equipment and insecticide	RTI				X	X	X									
Collect empty insecticide sachets and check against distribution records	RTI					X	X	X								All IRS wastes including empty sachets collected	
<b>IEC Development &amp; Implementation</b>	Develop IEC/BCC material tailored to local use in consultation with	RTI			X	X											IEC materials produced. Training completed.

Component	Activity	Person/ partner Responsible	Project Month												Key Milestones	
			J	F	M	A	M	J	J	A	S	O	N	D		
	AED, HEEC and other partners															Campaign launched.
	Train staff and district personnel in IEC	RTI IEC Coordinator				X										
	Disseminate IEC/BCC messages via radio, workshops, pamphlets	RTI					X	X	X							
	Conduct IEC/BCC mobilization	RTI				X	X	X								
	Conduct pre- and post-spray surveys on IEC/BCC effectiveness	RTI				X				X	X					
<b>Spraying Operations</b>	Recruit and hire spray personnel	District health offices				X										District staff recruited and trained. Medical check-ups completed. Training completed. Spraying launched. Spraying completed. Equipment and supplies recaptured.
	Conduct training of trainers (TOT) and spray operator training	RTI, ZHO, DHO				X	X									
	Perform pre-, during, and post-operational inspection of environmental safety measures	RTI		X			X			X						
	Hire vehicles for logistics support	RTI					X	X								
	Conduct spraying	RTI, DHOs					X	X								
	Conduct mop-up visits	RTI, DHOs					X	X								
	Conduct monitoring visits	RTI, Multi-sectoral monitoring committee					X	X								
	Collect, clean, enumerate, and store materials and equipment	RTI							X	X						
<b>Monitoring &amp; Evaluation</b>	Meet with NMCP, CDC, and USAID to discuss monitoring and evaluation plan	RTI				X	X									indicators reviewed and performance monitoring plan developed
	Review indicators and develop a Performance Monitoring Plan	RTI					X									
<b>Reporting</b>	Submit quarterly report					X			X			X				Reports produced and submitted timely
	Submit quarterly financial report	RTI				X			X			X		X		
	Submit end of spray round report	RTI									X					
<b>Entomological Monitoring</b>	Continue monthly entomological monitoring and data analysis	RTI, AAU, EHNRI, CDC, LATH	X	X	X	X	X	X	X	X	X	X	X	X	X	Entomological monitoring conducted and reported

## Attachment ' : Ethiopia Countdown Calendar

For period from January 2009 to December 2009

Component	Key Milestone	Date to be Completed	Antecedent to:
<b>Complete FY 2008 pending activities</b>	TOT on spray pump maintenance completed	January 2009	Final logistics assessment
	Mapping, geocoding of household structures for IRS completed	April 2009	
	Rehabilitation of Adama MRTC completed	April 2009	Assessment and release of tender
	Result of environmental monitoring sample analysis shared with all concerned	February 2009	Supplemental EA
<b>Assessment</b>	Supplemental Environmental Assessment conducted	March 2009	2 <sup>nd</sup> round IRS operation
<b>Procurement and Logistics</b>	Remaining evaporation tanks building completed	March 2009	2 <sup>nd</sup> round IRS operation
	Insecticide procured	February 2009	2 <sup>nd</sup> round IRS operation
	Technical specifications for IRS equipment developed, released and notified for procurement	February 2009	Bid announcement
	Vendors reviewed and selected	February 2009	Bid award
	PPE and IRS equipment received	March 2009	IRS TOT
	Districts' storages rehabilitated	March 2009	Reception of IRS equipment
	IRS equipment and materials transported to district storages	April 2009	IRS TOT/ Initiation of spray operation
	Insecticide transported to districts	April 2009	
	Storekeepers and district supervisors trained on insecticide tracking and record keeping	April 2009	IRS operation
	Empty insecticide sachets collected and checked against distribution records	July 2009	End of the day/end of operation
<b>IEC Development &amp; Implementation</b>	IEC materials developed and tailored to local use in consultation with AED, HEEC and other partners	April 2009	Launching IEC campaign
	District personnel trained on IRS specific IEC		



	IEC messages disseminated via radio, workshops, pamphlets	End June 2009	Before and during IRS operation
	IEC mobilization conducted		
	Pre- and post-spray surveys on IEC effectiveness conducted	July 2009	Initiation of IRS operation
<b>Spraying Operations</b>	Personnel identified and training of trainers (TOT) on IRS conducted	April 2009	Initiation of IRS operation
	Spray operators recruited, hired and trained	April 2009	Initiation of IRS operation
	Pre-, during, and post-operation inspection of environmental safety measures performed	April and July 2009	
	Vehicles hired for logistics support	End June 2009	Initiation of IRS operation
	Spraying operation completed	End June 2009	Environmental assessment
	Mop-up visits conducted	Mid May to End June 2009	End of IRS operation
	Monitoring visits completed	End June 2009	End of IRS operation
	IRS materials and equipment collected, cleaned, enumerated and stored	End June 2009	Environmental assessment
<b>Monitoring &amp; Evaluation</b>	Discussion held with NMCP, CDC, and USAID on monitoring and evaluation plan	April 2009	Initiation of IRS operation
	Indicators reviewed and performance monitoring plan developed	April 2009	Initiation of IRS operation
<b>Reporting</b>	Quarterly report submitted	Quarterly	
	Quarterly financial report Submitted	Quarterly	
	End of spray round report submitted	End September 2009	
<b>Entomological Monitoring</b>	Monthly entomological monitoring conducted	Monthly	

## Attachment ( : IRS Sustainability Chart Partners' Proportional Responsibility Matrix

Activity	Proportional Responsibility (%)					
	Round Two		Round Three		Round Four	
	MOH	RTI	MOH	RTI	MOH	RTI
<b>Partnership development</b>						
Establish IRS oversight committees	80	20	90	10	90	10
<b>Environmental compliance</b>						
Prepare Environment Assessment	20	80	50	50	80	20
Environmental monitoring Plan	20	80	40	60	50	50
Environmental compliance inspection	10	90	20	80	20	80
<b>Entomological surveillance</b>						
Identify and train entomological technicians	60	40	80	20	90	10
Baseline survey	50	50	80	20	90	10
Periodic surveys	60	40	80	20	90	10
<b>IEC Program</b>						
Formative research	90	10	90	10	90	10
Training of IEC mobilizers	50	50	70	30	90	10
Production of materials	10	90	90	80	40	60
Pre-IRS IEC mobilization	50	50	70	30	90	10
IEC coordination with IRS	50	50	70	30	90	10
Post spray IEC survey	40	60	50	50	50	50
<b>Logistics procurement and management</b>						
Field visit for logistics needs assessment	50	50	60	40	60	40
Issue requisitions	10	90	50	50	50	50
Logistics delivery	10	90	50	50	50	50
Micro-planning	50	50	50	50	50	50
Logistics chain of custody	10	90	30	70	30	70
<b>IRS operations</b>						
Geographical reconnaissance	20	80	40	60	40	60
Training of supervisors and SOPs	20	80	20	80	20	80
Spraying operations	20	80	20	80	20	80
Post spraying Activities	50	50	80	20	80	20