END NEGLECTED TROPICAL DISEASES IN ASIA



Final Report

including Annual Report for the period
October 1, 2014 to September 30, 2015

End Neglected Tropical Diseases in Asia

Submitted:

September 7, 2015

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End Neglected Tropical Diseases in Asia (END in Asia)

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Acronyms and Abbreviations

ADB	Asian Development Bank
APRO	Asia Pacific Regional Office
ARMM	Autonomous Regional of Muslim Mindanao
CMPE	Center for Malariology, Parasitology and Entomology, Laos
CNM	National Center for Parasitology, Entomology and Malaria Control, Cambodia
DCDC	Department of Communicable Disease Control, Laos
DOH	Department of Health
EMMP	Environmental Monitoring and Mitigation Plan
FHI 360	Family Health International
FOG	Fixed Obligation Grant
GSP	Global Positioning System
ICT	Immunochromatographic Test
IEC	Information, Education and Communication
LF	Lymphatic Filariasis
MDA	Mass Drug Administration
Mf	Micro Filaria
MOE	Ministry of Education
MOH	Ministry of Health
NDOH	National Department of Health, Papua New Guinea
NIMPE	National Institute for Malariology, Parasitology and Entomology, Vietnam
NEHP	National Education Health Program
NIO	National Institute of Ophthalmology, Vietnam
M&E	Monitoring and Evaluation
NTD	Neglected Tropical Diseases
PNG	Papua New Guinea
RTI	Research Triangle Institute International
SIEE	Supplemental Initial Environmental Examination
SCH	Schistosomiasis
STH	Soil Transmitted Helminthes
TAS	Transmission Assessment Survey
TOT	Training of Trainers
SHD	School Health Program
TV	Television
USAID	United States Agency for International Development
WHO	World Health Organization

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Executive Summary

This Final Report documents the accomplishments of Family Health International's (FHI 360's) "End Neglected Tropical Diseases in Asia project" (END in Asia) under USAID Cooperative Agreement No. AID-OAA-A-10-00051. The project has very successfully provided management, financial and technical assistance to six priority countries - **Bangladesh, Cambodia, Laos, Papua New Guinea, the Philippines**, and **Vietnam,** which has enabled each of these countries to implement activities specifically designed to fill in crucial gaps and strengthen their efforts to control and eliminate the NTDs endemic in their respective countries.

Throughout the project, FHI 360 has maintained effective management systems in each focus country with high quality support provided through the local FHI 360 country office. A representative sample of field activities was monitored in each country to assess the quality of implementation and the environmental impact. All activities have been found to be in full compliance with all USAID and FHI 360 policies and procedures. Implementation has generally proceeded on schedule in most focus countries, with no major delays. Excellent working relationships have been maintained with each national NTD program, as well as with the relevant USAID mission and other critical local stakeholders, including the World Health Organization (WHO) in each country.

Major accomplishments by country include:

Bangladesh: The National Filariasis Elimination and STH Control Program, Ministry of Health has supported MDAs for lymphatic filariasis (LF) since 2004 throughout the 19 endemic districts in the country. By 2015, all of the districts but one have been able to stop mass treatment and the national program is in the process of fulfilling the criteria for validation of elimination including the required series of TAS surveys with support from END in Asia. Additional TAS surveys in several districts which were previously determined to have had very low endemicity have now shown that transmission has been completely interrupted, and the recent remapping of three non-endemic districts has also provided clear evidence on the continuing lack of transmission in these areas. In addition, the National Program has also organized regular MDAs for Soil Transmitted Helminthes (STH) for over 21 million children of school age since 2005, which were further strengthened with support from END in Asia for improved supervision, management and communications between 2011 and 2014.

Cambodia: The National Center for Malaria Control, Parasitology and Entomology (CNM), Ministry of Health, has been implementing a strong response for STH since 2002 and with the help of END in Asia has expanded their program to include all children of school age between 5 and 14 years old. (During Year Five of the END in Asia program, assistance to the STH control program has been discontinued.) CNM has also organized MDAs for Schistosomiasis (SCH) throughout the two endemic provinces since 1997, which were further strengthened with assistance from END in Asia for improved supervision, management at the local level, and improved communications, as well as regular tracking of the prevalence using standard sentinel and spot checks. In addition, CNM has been extremely successful in treating LF. They were able to stop mass treatment within the four endemic provinces in 2011 and following the successful completion of the three rounds of transmission assessment surveys, are currently in the process of documenting the elimination of the disease, with an LF Elimination Dossier officially submitted to WHO in August 2015. Finally, END in Asia has also worked closely with the National Program for Eye Health at the Ministry of Health to implement a national assessment of Trachoma in order to provide clear evidence concerning the

prevalence of the disease in the country with final results clearly proving that trachoma is no longer a public health issue in the country.

Laos: The Center for Malariology, Parasitology and Entomology (CMPE), Ministry of Health has a long history of responding to NTDs. Together with the Ministry of Education and Sport (MOES), CMPE has organized MDAs for STH for children of school age since 2005 and was able to expand the program with the assistance of END in Asia to reach children up to the age of 14 years through the junior secondary school system as well. Over 800,000 children are treated each year. General management of the program was also strengthened through improved supervision, a series of management workshops as well as extensive refresher training for local school administrators and teachers. In addition, CMPE has organized mass treatment for SCH since 1990 within the one endemic province, with over 68,000 treatments provided during this year. Again, the program has benefited from improved management, stronger community participation and regular tracking of prevalence funded by END in Asia. Annual MDAs for LF have also been organized within the one endemic province since 2007, and treatment provided to the 137,000 people at risk during this this year following extensive strengthening of the management of the program with the assistance of END in Asia. END in Asia has also been working closely with the Center of Ophthalmology to implement a national assessment of trachoma with the assistance of international trachoma experts which has provided clear evidence that trachoma is not a public health concern in the country. The Directorate for Communicable Diseases Control (DCDC), Ministry of Health continues to provide technical and administrative oversight and coordination for all of these activities with funding from END in Asia.

Papua New Guinea: In 2013, the National Department of Health (NDOH) in Papua New Guinea requested assistance from USAID through END in Asia to help address their serious problem with very high NTD infection rates. Efforts have focused on developing a pilot MDA for LF in one province, New Ireland, including the establishment of all required management and other support systems needed to ensure a successful program. A pilot LF MDA was organized in New Ireland province in May 2014, with over 121,000 people treated (79% of the targeted population), and a second round of LF MDA was successfully organized in the same province in 2015, with END in Asia providing the refresher MDA management training for local health staff and MDA supervisors.

The Philippines: The NTD Elimination and Control Program, Department of Health (DOH) has been responding to various NTDs for many years and has made considerable progress in controlling these diseases, though much work remains to be done. LF is endemic is 43 provinces across the country, with 23 already reaching elimination. Schistosomiasis is also endemic in a total of 28 provinces, but despite years of effort, prevalence in many areas remains high. STH is endemic in all of the 81 provinces in the country, and mass treatment is provided regularly through the school system and community health centers. END in Asia has worked closely with the DOH to strengthen the management of all of these programs through a wide variety of trainings and workshops at all levels, organizational meetings, innovative communications, more comprehensive monitoring and supervision, as well as tracking of prevalence rates through the appropriate surveys and mapping exercises as recommended by WHO.

Vietnam: The National Institute of Malaria, Parasitology and Entomology (NIMPE), Ministry of Health has organized a very strong and successful program to eliminate LF throughout the four endemic provinces in the country, and was able to stop mass treatment in 2011. They are now well into the process of documenting elimination of the disease following the success completion of the required series of transmission assessment surveys with the assistance of END in Asia. END in Asia has also assisted in providing technical support for the drafting of a comprehensive dossier for the

verification of LF elimination by WHO which is expected to be submitted for review in late 2015. STH, on the other hand, remains a concern. A total of 53 out of the 63 provinces in the country are endemic for STH, but NIMPE has only been able to support MDAs in 36 of these endemic provinces. END in Asia has provided financial support for STH MDAs for both children of school age and women of reproductive age in several high priority provinces, and has also assisted with strengthening the management of the program through a series of national workshops and increased monitoring and supervision in the field. In addition, END in Asia has worked closely with the National Institute of Ophthalmology, Ministry of Health to implement a national assessment of trachoma to provide evidence of the status of the disease in the country as the basis to determine an appropriate response.

Lessons Learned: Major lessons learned throughout the full five years of implementation of the project include the critical importance of **Country Ownership** to embower each national NTD program and encourage long-term sustainability; **Flexibility** in all aspects of design, management and administration of program assistance; appropriate and timely **Technical Assistance;** active **Collaboration** with the full range of players in each country; and appropriate yet thoughtful **Data Collection and Management.**

Introduction

This Final Report documents the accomplishments of Family Health International's (FHI 360's) "End Neglected Tropical Diseases in Asia project" (END in Asia) under USAID Cooperative Agreement No. AID-OAA-A-10-00051. The project has very successfully provided management, financial and technical assistance to six priority countries - **Bangladesh, Cambodia, Laos, Papua New Guinea, the Philippines**, and **Vietnam,** which has enabled them to successfully implement activities specifically designed to fill in crucial gaps and strengthen their efforts to control and eliminate specific NTDs in their respective countries.

Throughout the project, FHI 360 has maintained effective management systems in each focus country with high quality support provided through the local FHI 360 country office. A representative sample of field activities was monitored in each country to assess the quality of implementation and the environmental impact. All activities have been found to be in full compliance with all USAID and FHI 360 policies and procedures. Implementation has generally proceeded on schedule in most focus countries, with no major delays. Excellent working relationships have been maintained with each national NTD program, as well as with the relevant USAID mission and other critical local stakeholders, including the World Health Organization (WHO) in each country.

Each of these national NTD programs has used the opportunities provided by END in Asia to significantly improve the quality of program management; strengthen coordination among the many implementers at all levels; increase local community mobilization and participation; expand the scope of activities; and maximize the impact of their responses to the NTD endemics in their country.

This Final Report consists of three major sections. **Section One** contains a detailed description of all major activities implemented in each focus country during Year Five of the project (October 2014 to September 2015) based on the approved workplan. **Section Two** contains a comprehensive summary of the national NTD response in each of the six focus countries including a description of the specific contributions USAID, through FHI 360, has made to fill in gaps and strengthen each respective National NTD program over the last five years. **Section Three** contains a brief explanation of the major Lessons Learned during the life of the project which may be of interested to those involved in planning and implementing future NTD assistance.

Section One

Annual Report

October 2014 to September 2015

I. Project Management

During this reporting period, October 1, 2014 to September 30, 2015, the National NTD Programs in the six priority countries - Bangladesh, Cambodia, Laos, Papua New Guinea, the Philippines, and Vietnam – continued to make excellent use of the support provided under the End Neglected Tropical Diseases in Asia (END in Asia) program managed by Family Health International (FHI 360).

- Implementation in all six focus countries commenced on October 1, 2014 based on the approved END in Asia Workplan Year Five and the individual Country Workplan for each country following careful review by USAID.

- A Fixed Obligation Grant (FOG) was issued to the National NTD Program, Ministry of Health in Bangladesh on October 1, 2015 and another FOG was issues to the National Institute for Malariology, Parasitology and Entomology, Ministry of Health in Vietnam on November 1, 2014 to fund those specific activities to be implemented directly by the respective ministry. Another FOG had been previously executed with the National Institute of Ophthalmology in Vietnam in May 2014 to fund the implementation of a National Trachoma Assessment with some activities to be carried over into 2015. The FOG funding mechanism has worked extremely well, with its streamlined, simple, and efficient administrative requirements.

- Also in Bangladesh and Vietnam, FHI 360 staff from the respective country offices continued to provide financial administration and procurement services for those specific support activities that would be difficult to administer under a FOG, such as the printing of materials, mass media placement, and other local contracting/procurement.

- In Cambodia, Laos, the Philippines and Papua New Guinea, as requested by the local USAID missions, the FHI 360 country office continued to act as the fiscal agent and provide direct funding and financial administration for all END in Asia support in each country, while the respective National NTD Program remained responsible for organization and actual implementation of program activities. FHI 360 hired an appropriate number of either part-time or full-time staff in each country to manage program funds and work in close collaboration with the National NTD Program staff. All activities were effectively implemented in each country as outlined in their respective Country Workplans.

- FHI 360 was able to put in place all required management systems and experienced staff to administer project support in each of the six focus countries, Bangladesh, Cambodia, Laos, the Philippines, Papua New Guinea, and Vietnam, with oversight and coordination provided by the Project Director and senior staff at the FHI 360 Asia Pacific Regional Office (APRO) in Bangkok. Monitoring of implementation in the field, environmental compliance, and financial administration of the FOGs has been organized as required in each country, and results have been consistently excellent.

- The coverage and treatment results of END in Asia, as well as other relevant data from the National NTD Program in each focus country have been officially reported to USAID/ENVISION in March and in September 2015 using the standard END in Asia Workbook reporting format.

- The project director participated in the USAID NTD Partners Meeting in Washington DC on December 4 and 5, 2014 to facilitate collaboration among the various components of the NTD portfolio and ensure that all projects are working towards greater synergy and sharing

best practices. Representatives from WHO and CDC were also included for the first time. While in DC, several special meetings were also arranged to discuss the close out of END in Asia as well as other administrative and management issues.

Achievements during this reporting period based on the Performance Indicators as identified in the END in Asia Workplan Year Five may be found in Attachment 1. Mass Drug Administration (MDA) coverage and treatment data for all focus countries during the current year may be found in Attachment 2.

II. Implementation

Bangladesh:

The National Filariasis Elimination and STH Control Program, Ministry of Health has supported MDAs for lymphatic filariasis (LF) since 2004 throughout the 19 endemic districts in the country. All but one have now been able to stop mass treatment and are in the process of documenting elimination. In November 2014, over 2,790,000 people were treated for LF. The National Program has also organized MDAs for Soil Transmitted Helminthes (STH) for children of school age since 2005. (Assistance to the STH control program from END in Asia has been discontinued during Year Five.) END in Asia has supported these massive efforts during this reporting period through the following activities:

Lymphatic Filariasis:

- The National NTD Program successfully completed the implementation of a MDA for Lymphatic Filariasis in Rangpur District during November 2014. This is the last remaining district in the country that still requires mass treatment, and the National Program was determined to pull out the stops to ensure that the preparation and local management of the MDA were of the highest quality possible. To support the MDA, END in Asia financed a series of local **Management Meetings** in the district during October 2014 to better prepare for, promote and organize the MDAs. END is Asia also helped procure a variety of **promotional materials** including posters, leaflets and banners that were distributed throughout the district prior to the MDA, as well as organizing local **"miking" activities**, where mobile loud speakers were used to announce the MDAs in communities across the district, and evening **video shows** using the NTD videos previously developed by the project. Over 2,790,000 people received treatment, which represents an 82% coverage rate, and reflects the extraordinary efforts to promote, monitor and supervise the MDA by the National Program.

- In preparation for the Transmission Assessment Surveys that were planned during 2015, END in Asia procured 13,000 **ICT Tests** which were delivered to Dhaka in November 2014.

- The National Program implemented two units of the **LF Transmission Assessment Surveys** in Sirajgonj District during March 2015, and no positive cases were found. Two TAS surveys were organized in Pabna District in early April and one TAS in Kustia District was organized from April 19 to 22, 2015. All test results were negative. The final two LF surveys planned for Year Five were implemented in Chuadanga district from May 4 to 9 and in Pirojpur

district from 18 to 21 May, 2015. All these test results were negative as well, which confirms that LF transmission remains interrupted in all of these formerly highly endemic areas.

- The National NTD Program, MOH organized a series of **Data Validation Trips** during which a small team from the national level visited selected districts to review and validate all program data from the Lymphatic Filariasis elimination program collected since the beginning of the program in 2001 and retrieve any missing data to ensure complete and accurate records in preparation for the development of the comprehensive LF Elimination Dossier as required by WHO to verify the success of the program. Five separate teams visited the districts of Chuadanga, Chapainababgonj, Rangpur, Jhalokathi, and Thakurgaon from July 14 to 16, 2015. Surprisingly, they were able to collect almost all of the missing data, which is now being entered into the national NTD program data base.

- The National NTD Program has also organized the R**emapping of three previously LF non-endemic districts** to see if they remain free of transmission as these areas are either surrounded by endemic districts or have had recent reported cases of LF infection in the area. The National Program finalized a Protocol for the Remapping based on a new methodology developed by the Task Force for Global Health and US CDC and site selections for the surveys in the three districts was completed using a tool developed by the Task Force. Following an organizational meeting in each district, implementation of the survey in 30 randomly selected schools took place in Natore District from August 9 to 13, in Tangail District from August 16 to 20, and in Sherpur District from August 23 to 27, 2015. Results from all three districts showed a complete lack of LF positive cases, and confirm that these areas remain non-endemic.

Cambodia:

The National Center for Malaria Control, Parasitology and Entomology (CNM), Ministry of Health, has been implementing a strong response for STH since 2002 and with the help of END in Asia has expanded their program to include all children of school age between 5 and 14 years old. (During Year Five of the END in Asia program, assistance to the STH control program has been discontinued.) CNM has also organized MDAs for Schistosomiasis (SCH) throughout the two endemic provinces since 1997. In addition, CNM has been extremely successful in treating LF. They were able to stop mass treatment within the four endemic provinces in 2011 and are currently in the process of documenting the elimination of the disease, with an LF Elimination Dossier officially submitted to WHO in August 2015. Finally, END in Asia has also worked closely with the **National Program for Eye Health** at the Ministry of Health to implement a national assessment of Trachoma in order to provide clear evidence concerning the prevalence of the disease in the country and determine if it is a public health issue that needs to be addressed. During this reporting period, END in Asia has supported these massive efforts through the following activities:

Schistosomiasis:

- Routine **SCH Sentinel Site Surveys** were organized in selected communities within the two endemic provinces, Kratie between October 16 and November 1, 2014, and in Steung Treng from December 15 to 28, 2014, using the standard WHO protocol, in order to monitor the status of the disease and track the impact of the continuing MDAs. Results are currently being compiled and analysed. A second round of Sentinel Site Surveys was organized in both provinces from May 11 to 22, 2015 to track the status of the disease and ensure that the

prevalence remains below the official WHO standard for a public health problem. Analysis of stool samples using the Kato Katz method has been completed, and results showed only three positive cases our of 713 samples tests, or a positive rate of only 0.4%.

Lymphatic Filariasis:

- A shipment of 8,000 **ICT Tests** has arrived in country to support the implementation of the final round of LF Transmission Assessment Surveys for Cambodia, which are scheduled to be implemented between January and March 2015.

- **Transmission Assessment Survey (TAS) for LF** was organized in Ratanakiri province from December 14 to 31, 2014; in Siem Reap province from January 12 to 29, 2015; in Stueng Treng province from February 13 to 28, 2015; and in Preah Vihear province from March 15 to 30, 2015, to confirm that transmission of the disease continues to be interrupted. Results of all four surveys were well below the cut off criteria, and Cambodia has therefore completed all of the requirements established by WHO to declare elimination of the disease as a public health issue.

- END in Asia in collaboration with the ENVISION project has provided the services of **Dr. Ramaiah Kapa, an international expert on NTDs**, to assist CNM to compile documentation and draft a dossier for submission to WHO to verify the elimination of LF as a public health issue in Cambodia. Dr. Ramaiah, together with Marci Van Dyke from USAID/W, worked on the dossier at CNM from February 23 to March 6, 2015. Dr. Ramaiah Kapa, visited Cambodia for a second time from June 8 to 12, 2015 to assist CNM to revise and finalize their dossier which was officially submit to the WHO Regional Office in Manila in early July 2015. Cambodia is one of the first countries in Asia to have fulfilled the WHO criteria for verification of elimination of LF, after more than two decades of intensive and dedicated efforts by CNM.

- A shipment of **Brugia Test Kits** (2,000 tests) provided by END in Asia arrived in Phnom Penh in May 2015, for use during a special **LF Transmission Assessment Survey** in Rattanakiri province which was implemented in July 2015, as recommended by WHO to ensure that this particular type of LF, *Brugia Malayi*, is not being transmitted in the area. Results found only one positive case, and this information is being added to the LF Elimination Dossier as requested by WHO during their review of the dossier in July 2015.

Trachoma:

- Intensive activity has surrounded the **National Trachoma Assessment** for several year in collaboration with the National Eye Health Program at the MOH. During Year five, eight survey teams each consisting of a certified Trachoma eye grader and a data recorder completed surveys in Kratie province from October 1 to 13; in Svey Rieng province from October 28 to November 5; in Prey Veng province during December 2014; in Preah Vihear province during mid January 2015; in Ratanakiri province beginning on February 18 and in Mondulkiri province on February 24, 2015. A total of 30 households were surveyed in each of 39 randomly selected villages in each province. Each provincial survey began with an Orientation Workshop to introduce the protocol and organize local support and logistics. Surveys in all of the twelve provinces included in Phase One of the National Trachoma Assessment have been completed. Following WHO recommendations two additional provinces were then added to Phase One (for a total of 14 Evaluation Units) in order to better represent all possible areas where

Trachoma may have been present. Results for these last surveys confirmed that no active trachoma cases were present across all evaluation units. These final results from Phase One have remained consistent, are sufficient to prove that Trachoma is not a public health problem in Cambodia, and implementation of Phase Two there was not needed. To be completely rigorous and remove all doubt about the status of Trachoma in the country, special investigations of previous trachoma hotspots in Kampong Chhnang and Battambang were also surveyed beginning on April 27, 2015. These investigations, which were completed by May 16, 2015, confirmed that there was absolutely no continuing transmission of the disease in these specific areas that were highly endemic during early surveys in 2004. This data, when combined the results of the National Trachoma Assessment, provide unquestionable, complete and reliable evidence that trachoma is not a public health concern throughout Cambodia. The final report of the National Trachoma Assessment was written by the two international trachoma experts who have been assisting with the surveys from the beginning, and was disseminated during an official **Dissemination Workshop** by the Ministry of Health on July 9, 2015.

General:

- Work has also continued on the development of a variety of **IEC Materials** to support the national NTD program, including a children's comic book, posters, stickers, calendars and other resource materials. Following pre-testing and printing, these materials have been distributed to schools and community health centers around the country throughout the past year.

- Refresher **Training for NTD Program Managers** has been organized in Preah Sihanoukville, Kratie, Pursat, and Kampong Chhnang during December 2014; in Siem Reap province on January 13 and 14, and January 15 and 16: in Kampong Thom province on January 20 and 21 and in Ratanakiri province on January 28 and 29, 2015; in Kampung Speu province on February 5 and 6, 2015; in Takeo province on 3 and 4 March as well as 5 and 6 March; in Svay Rieng province on 11 ad 12 March; and in Prey Veng province on 17 and 18 March as well as March 19 and 20, 2015, as part of the critical effort to upgrade the program management capacity of provincial and district level officials across the country. The trainings continued in Kampong Cham (two trainings) on March 31 to April 1 and April 2 to 3, 2015; in Preah Vihear Province from April 7 to 8, 2015; in Kampot province (two trainings) on April 21 and 22, and April 23 1nd 24; and in Mondulkiri province from April 28 to 29, 2015. These were followed by trainings in Koh Kong province on May 7 and 8; in Kambung Cham province on May 19 and 20 as well as on May 21 and 22; and in Battambang province on May 26 and 27 as well as on May 28 and 29, 2015; and in Banteay Menchey province on June 2 and 3 and on June 4 and 5; in Oddur Meanchey province on June 16 and 17; and in Phnom Penh for participants from Kendal province on June 23 and 24 and on June 25 and 26, 2015. These two-day courses focused on introducing the newly revised NTD strategies and guidelines and facilitating more active local support and involvement in managing NTD activities in the field. Approximately 100 to 150 local health officials have attended each course.

- The Ministry of Health has organized a **National NTD Conference** from February 23 to 24, 2015 in Siem Reap for 306 participants including representatives from the Ministries of Health, Interior, Defence, and Education; provincial and district level health officials from across the country, as well as international NGO partners. The Conference focused on three major topics – the national responses to Malaria, NTDs and Dengue. Achievements during

the previous year were presented, and workplans for 2016 were discussed and finalized. END in Asia shared the cost of this conference with the MOH, which enabled the organization of several side sessions specifically focused on the NTD control and elimination efforts.

Laos:

The **Center for Malariology, Parasitology and Entomology** (CMPE), Ministry of Health has a long history of responding to NTDs. Together with the **Ministry of Education and Sport** (MOES), CMPE has organized MDAs for STH for children of school age since 2005 and was able to expand the program with the assistance of END in Asia to reach children up to the age of 14 years through the junior secondary school system as well. In addition, CMPE has organized mass treatment for SCH since 1990 within the one endemic province, with over 68,000 treatments provided during this reporting period. Annual MDAs for LF have also been organized within the one endemic province since 2007, and treatment provided to the 137,000 people at risk during this reporting period. END in Asia has been working closely with the **Center of Ophthalmology**, as well, to implement a national assessment of trachoma with the assistance of international trachoma experts. The **Directorate for Communicable Diseases Control** (DCDC), Ministry of Health continues to provide technical and administrative oversight and coordination for all of these activities. The specific activities supported by END in Asia during the year include:

Trachoma:

- During the **National Trachoma Assessment** which was completed in August 2014, three potential Trachoma "hotspots" were identified. Following extensive discussions with a host of international Trachoma experts, an innovative methodology was determined, an official protocol was developed and approved, and three survey teams were trained in the implementation of the required clinical eye examinations, and the collection of conjunctival swabs and dry blood spots from the entire population of children one to nine years old in the three hotspots. The teams completed the investigations in the field in Attapua, Pongsali and Houaphanh provinces between October 13 and 24, 2014. All biological samples were stored in deep freeze in Vientiane before shipping to the London School of Hygiene and Tropical Medicine in mid March 2015 where they were analyzed to determine if there is any active Trachoma present in these three areas. Although the analysis of the dry blood spots is still proving problematic, the international trachoma experts including WHO have concluded that Trachoma in Laos is not a public health concern and that no intervention is required. A final report of the comprehensive National Trachoma Assessment has been completed and is currently waiting for final approval from the MOH before submission to WHO.

Lymphatic Filariasis:

- **LF Sentinel Site and Spot Check Surveys** were organized in Attapua province from October 20 to 31, 2014. Blood samples from 300 students in each of the two established sentinel sites and in two randomly selected spot check sites were tested using ICT rapid tests. Four ICT positive cases were reported in each of two sites, and were confirmed by Mf testing. This shows that LF is still being transmitted in the area and that further MDAs are still required.

- A **LF MDA Preparation Meeting** followed by a **Refresher Workshop on LF MDA Management** have been organized in Attapua province from January 7 to 9, 2015 to ensure the successful organization of the LF MDA to be implemented in February, as well as to stimulate local ownership and commitment to increasing coverage across this very isolated and geographically challenging province. Approximately 70 local officials attended each activity.

- Following an LF MDA Preparation Meeting and Refresher Workshop on LF MDA Management, the **annual LF MDA** in Attapua province began on February 16 and continued until early March 2015. In addition, the community based LF MDAs in 6 villages in Sekong province which were found to have a small number of active LF cases during surveys last year, received the second round of treatment beginning on February 19, 2015. To ensure the successful implementation of these LF MDA a special effort to provide strong field supervision was organized by both DCDC and CMPE.

- Following an implementation of **annual LF MDA** in Attapua province which was organized from the end of February through March 2015, a supervision visit was organized from April 4 to 10, 2015 by staff from DCDC and CMPE to provide oversight of field activities and review results, as well as to finalize all administrative requirements. Official coverage results show a rate of 88.3%, which reflects a steady increase over previous years.

Soil Transmitted Helminthes:

- **STH MDA Supervision** visits were organized by a team from the Ministry of Education and CMPE, MOH to the three provinces of Pongsali, Luang Prabang and Sekong from October 20 to 24, 2014. During these visits two schools in each of two districts in each of the three provinces were assessed including a thorough review of the data from the previous STH MDAs; interviews with principals, teachers and students; and a check on any reactions or adverse effects with the staff of the local health centers. These supervision visits are a regular part of the overall management system of the STH MDAs, and continue to ensure the high quality and extensive coverage of the program.

- **STH Refresher Training** has been organized in three provinces, beginning with a two-day training for officials from the provincial and district level health and education services, followed by a district level trainings for school administrator and teachers. There trainings were organized in Khammouan Province in November 2014 with 40 officials attending the provincial training and a total of 310 participants at the district level trainings. Similar trainings were organized in Borkeo province in December 2014, with 27 participants at the provincial level training and a total of 160 participants from all five districts in the province at the district level training. Additional training was held in Oudomxay province from February 16 to 27, 2015 with 35 officials attending the provincial training and a total of 210 participants at the district level trainings; and in Xayaburi province from April 1 to 10, 2015 with 28 officials attending the provincial training and a total of 300 participants at the district level trainings. Since the only previous training on STH was organized over a decade ago, these trainings are proving extremely effective in stimulating local ownership and improvements in the management of the MDAs in schools across there provinces.

Schistosomiasis:

- A **Schistosomiasis MDA Organization Meeting** was held in Champasak province on November 14, 2014 to discuss preparations for the upcoming MDA in the two endemic districts in the province, with the goal of increasing coverage to a maximum level. Included in the 49 participants were provincial and district officials as well as representative from DCDC, CMPE, WHO and the Minister of Health, himself, which highlights the very high level commitment Laos is now providing to all NTD activities.

- The official **Launch of the SCH MDA** was organized in Khong district on December 18, and in Moon district on December 19, 2014 which included an array of provincial and district level officials and over 900 community leaders and school children, each of which were given the appropriate drug treatment during the ceremony. Teams from the district health services then spanned out throughout their respective districts during the next month to provide mass treatment to each and every community in their catchment areas. Rapid response teams were also set up to provide immediate care for any adverse reactions that may occur.

- The **MDA for Schistosomiasis** continued across Khong and Moon districts in Champasek throughout January 2015. Teams from the district health services have organized the distribution of appropriate drugs to the population in each and every community in their catchment areas. Reported coverage was over 90% and was a result of the increased commitment by senior health officials and a much stronger involvement by local communities.

General:

- END in Asia provided funding to support the participation of one additional senior official from DCDC in the **WPRO Regional Training on Integrated NTD Program Management** that was organized by the WHO regional office in Manila from January 19 to 23, 2015.

- A **National NTD Stakeholder Meeting** was organized by DCDC with participation from CMPE, the Center for Ophthalmology, the Ministry of Education and all other stakeholders from February 2 to 4, 2015 in Thalad. Presentations on the current status of each of the various NTD programs were given and a comprehensive annual workplan for 2015 was jointly developed. Representatives from USAID and WHO participated together with 162 other officials. A major focus of discussions centered on the close of the END in Asia project and the difficulties of finding sufficient resources to carry on critical components of their NTD strategies.

- The series of three meetings were organized to revise the **National NTD Strategy** were organized in Vientiane and Thalad by DCDC between March and June 2015 with participation from CMPE, the Center for Ophthalmology, MOES, WHO, END in Asia and all other stakeholders, as well as provincial health staff. The previous NTD Strategy was finalized in 2008 and was in drastic need of an update to reflect changes in WHO guidelines and developments within the various NTD programs in country. The document has now been finalized and is being translated into English prior to submission to WHO for their technical review and concurrence.

Papua New Guinea:

In 2013, the **National Department of Health** (NDOH) in Papua New Guinea requested assistance from USAID through END in Asia to help them address their serious problem with very high NTD infection rates. Efforts have focused on developing a pilot MDA for LF in one province, New Ireland, including the establishment of all required management and other support systems needed to ensure a successful program. A pilot LF MDA was organized in New Ireland province in May 2014, with over 121,000 people treated (79% of the targeted population), and a second round of LF MDA was successfully organized in the same province in 2015. During the current reporting period, END in Asia provided the following support to these efforts:

Lymphatic Filariasis:

- The National Department of Health organized an **MDA Review and Data Management Workshop** from November 24 to 25, 2014 to review the implementation of the first round of MDA for LF in New Ireland province which was held in May 2014 with a special focus on the data collection system that was used. The workshop was held outside Port Moresby with over 30 participants from the NDOH, WHO, the provincial health authority of New Ireland, James Cook University and Case Western University as well as END in Asia. Following a very thorough review of the various interpretations of the official data collection tools used during the first round, as well as the numerous ways they were utilized (or not), the groups decided to simplify the system and use the standard reporting forms and data collection mechanism recommended by WHO. This should help greatly to improve both the quality and efficiency of data collection during the next round, planned for May 2015.

- End in Asia has collaborated closely with The National Department of Health to provide **technical assistance** to Gulf province during a visit from January 26 to 31, 2015 and to Sundaun province during a visit from February 8 to 13, 2015. During these visits a series of discussions with the provincial health authorities and other senior provincial officials were held concerning the possibility of expanding the LF MDA program into these provinces in the near future. Results were very promising, though the critical funding for these provincial programs from within the provincial health budgets may not be available until early in 2016. The provincial health authority in Sundaun has already appointment an LF program coordinator and established a small working group to help plan the first MDA once their local funding is available.

- End in Asia has collaborated closely with The National Department of Health to organized a **visit to New Ireland province** from April 27 to 30, 2014 to determine if adequate funding is available for the next round of LF MDA from the provincial and district budgets, who will be responsible for the overall management of the MDA at the provincial level, what support activities will be required, and when will all this actually take place.

- End in Asia has supported the organization of **Training for MDA Supervisors** from Kavieng and Namantanai districts in New Ireland province. This training was a critical part of the preparations for the second round of MDA for LF which was implemented in the province in June 2015. The training was held on May 25 and 26 for 31 participants from Namatanai district and on May 28 and 29, 2015 for 41 participants from Kavieng district. The training was facilitated by a team from the NDOH and WHO with the support of the provincial health authority and was enthusiastically received. Following this training for supervisors, each district organized their own training of MDA volunteers using their own resources, prior to

the implementation of the MDA which will be funded by the NDOH. END in Asia also assisted with the printing of the MDA reporting forms and IEC materials to better promote the MDA within the local communities.

The Philippines:

The **NTD Elimination and Control Program**, Department of Health (DOH) has been responding to various NTDs for many years and has made considerable progress in controlling these diseases, though much work remains to be done. LF is endemic is 43 provinces across the country, with 23 already reaching elimination. Schistosomiasis is also endemic in a total of 28 provinces, but despite years of effort, prevalence in many areas remains high. STH is endemic in all of the 81 provinces in the country, and mass treatment is provided regularly through the school system and community health centers. During this reporting period, END in Asia provided support to the program through the various activities below:

Soil Transmitted Helminthes:

- An **Inter-Departmental Consultative Meeting for Region 1** was organized in Laoag City on January 14 and 15, 2015 to share results from the recent STH MDAs across the region, identify and address any policy issues or operational concerns that are impacting on successful implementation, and determine detailed plans for increasing the coverage of the STH MDA and improving implementation. Approximately 38 participants attended from the DOH and DOED in Manila, their regional representatives and Department of Education Medical Officers from the provincial level.

- The Department of Health organized a **National Integrated Helminthes Control Program DOH-DEPED Joint Consultative Meeting** from February 10 to 13, 2015 in Iliolo City for 62 participants from the central level DOH and well as DOH Regional Offices and regional STH and CP Coordinators from around the country. The objectives included introduction and discussion of the draft Joint Administrative Order and new Implementation Guidelines; presentation of the results to date of the National STH Survey being conducted by RITM; sharing of regional accomplishments reports and discussion of persistent problems; and the finalization of regional implementation plans. Prior to this Consultative Meeting, the DOH organized a preparation workshop in Manila from February 3 to 5, 2015 to finalize the draft Joint Administrative Order as well as other preparations for the meeting.

- Two **Inter-Departmental Consultative Meetings for Region 5 and Regional 12** were organized in Naga City on May 5 through 8 and in Davao City from May 19 to 22, 2015 to share results from the recent STH MDAs across the region, identify and address any policy issues or operational concerns that are impacting on successful implementation, and determine detailed plans for increasing the coverage of the STH MDA and improving implementation. Approximately 35 participants attended from the DOH and DOED in Manila and their regional representatives as well as Department of Education Medical Officers from the provincial level.

Schistosomiasis:

- The Department of Health organized a **Schistosomiasis Post MDA Reporting and Planning Workshop** in Davao City from November 3 to 8, 2014 in order to discuss results from the

2014 MDAs and focal surveys from all endemic areas in the country, update participants on the current policies and proposed budgets from the central level, share information from WHO on global SCH elimination efforts, and plan major SCH support activities for 2015. Over 60 officials attended from the Central DOH, Regional SCH Coordinators, Local Government Units from each endemic area, and DOH ARMM office. Costs for this activity were shared with the DOH.

- The Department of Health organized a **Malacological Forum for Local Government Units (Sanitary Inspectors) on the Control and Prevention of Schistosomiasis and Soil Transmitted Helminthiasis** in Cagayan de Oro City from October 27 to 31, 2014. Over 160 participants attended from around the country. Objectives of the forum included the provision of updates on program policies, guidelines and protocols; orientation on the use of the GPA as a malacological tool: and the development of plans of actions for SCH control in each LLG. This forum was funded by the DOH with a substantial cost share from END in Asia.

- A **SCH Mapping Workshop** was organized in Davao City for 45 sanitary inspectors from the municipal and provincial level in the four endemic provinces and one city in the Davao Region from December 1 to 6, 2014, including two days of field work, as recommended during the SCH Post MDA Planning Workshop. This effort should help to significantly increase the competency of the sanitary inspectors in detecting and mapping SCH, since this is a new responsibility only recently added to their job description.

- The Department of Health organized a **Schistosomiasis Program Consultative Meeting** in Davao City from January 13 and 14, 2015 to finalize plans and determine schedules for the SCH MDA and related support activities in Maguindanao province to be implemented during the first half of 2015. The opportunity was also used to meet with the DOH-ARMM regional coordinator and staff to discuss arrangements for other NTD activities in the ARMM region including the LF night blood surveys in Sulu and Basilan as well as an Integrated NTD Program Implementation Review Workshop scheduled for late February 2015.

- Following the Schistosomiasis Program Consultative Meeting in Davao City in January 2015, a **Workshop on Clinical Practice Guidelines for Para-Medics in Endemic Barangays in Maguindanao** was organized from February 24 to 26, 2015. Thirty four local health care providers were provided with a comprehensive introduction to SCH, information on how to identify SCH infections and how to provide appropriate treatment and referral, as well as how to manage the next round of SCH MDA in the area.

- In preparation for the upcoming SCH MDA, the Department of Health has organized a series of four **Schistosomiasis Orientation and Organization Workshops for Community Health Teams in Endemic Barangays in Maguindanao** during March 2015. Each of the four two-day workshops focused on discussing the basics of SCH control; the registration process; roles and responsibilities prior, during and after the MDA; and the detailed scheduling of implementation. Ten resources persons from the DOH in Manila facilitated the workshops, and a total of over 240 community health workers attended.

- Following the Schistosomiasis Program Consultative Meeting in Davao City in January 2015, a second **Workshop on Clinical Practice Guidelines for Para-Medics in Endemic Barangays in Maguindanao** was organized from April 13 to 17, 2015. Forty two local health care providers were provided with a comprehensive introduction to SCH, explanations on how to

identify SCH infections and how to provide appropriate treatment and referral, as well as how to manage the next round of SCH MDA in the area.

- An **Advocacy Forum for Schistosomiasis in Manguindanao for Local Government Units and Local Chief Executives** was organized in General Santos City from April 27 to 29, 2015 to increase awareness and lobby for the support of the local chief executives at the village and municipal levels for the SCH control activities in their respective areas. Over 90 local officials attended.

- Following a series of preparation activities over several months, the DOH together with provincial authorities in the ARMM region have organized the implementation of a **MDA for Schistosomiasis in Maguindanao** which commenced on May 25 and continued through June 6, 2015. The MDA covered the ten municipalities and 16 barangays which are endemic for SCH in the province. Coverage data is still being collected, though anecdotal evidence strongly suggests very high coverage numbers.

Lymphatic Filariasis:

- The DOH also organized a **Consultative Meeting** in Zamboanga City from November 17 to 19 to prepare and finalize plans for an **LF Mid-Term Assessment Survey** using night blood examination in the ARMM provinces of Basilan and Sulu. Ten representatives from the DOH, ARMM DOH, and the provincial health offices in Basilan and Sulu attended. A series of W**orkshops** followed to prepare program coordinators and field survey teams to implement the surveys. Approximately 30 participants attended the two-day training in each province. The surveys were conducted from January 20 to February 14, 2015 following standard WHO protocols and using newly revised reporting forms. Provincial medtech officers read all of the blood slides and a sample (approximate 10% of the 1,500 samples) were validated by the University of the Philippines Center for Public Health.

- A special **LF Dossier Preparation Workshop** was organized in Cebu City from March 10 to 13, 2015 for 18 participants from Region 8 to begin the process of collecting appropriate data and compiling comprehensive dossiers detailing the process of LF elimination in each of these endemic provinces, beginning from mapping, through MDAs and final surveillance. The DOH has had to foresight to begin this lengthy process now while the data and institutional memory in each of these provinces are still intake, instead of waiting several more years until such time as the DOH will need to submit a dossier covering the entire country in order to receive verification from WHO of the elimination of the disease throughout the Philippines. Technical assistance was provided by Dr. Ramaiah, our international LF expert, through the ENVISION Technical Assistance Facility.

- An **Orientation Meeting on LF Transmission Assessment Surveys in the Bicol Regional** was organized by the DOH from March 30 to April 1, 2015 in Manila for 13 health official from the Bicol Region and Sorsogon Province. The meeting was facilitated by four staff from the DOH, with the objective of providing an update on regional status of LF elimination, discussing results of the TAS surveys in the region, and determining mechanisms to ensure the continuing interruption of transmission of the disease in the future.

- In preparation for a **LF Transmission Assessment Survey (TAS)** in Maguindanao province, the DOH organized an **Orientation Session** in Davao City from May 4 to 7, 2015 for 30 participants from the provincial health services, followed by an **Organizational Meeting** in

Cotabato City to do the final site selections and detailed planning for the TAS on May 26, 2015. The **LF Transmission Assessment Survey (TAS)** in Maguindanao province was successfully implemented during June 2015, which included collecting blood samples from 3,247 students from randomly selected schools across the province and testing them with the ICT rapid test cards. All tests were negative for LF, which means that the province can safely terminate mass drug treatments next year since there is clear evidence of the complete interruption of transmission. Maguindanao is the first province in the special ARMM region that has been able to stop treatment for LF following seven years of MDAs.

General:

- The **Consultant for Advocacy** continues to actively support the National NTD Program in organizing a wide variety of strategic advocacy activities with relevant government units (at all levels), civil society, and the private sector; and continues to expand her role in providing crucial management and administrative support to all END in Asia and other NTD program activities.

- END in Asia also assisted the DOH to **supervise and monitor** a variety of NTD activities across the country including an Annual Conference on the National Filariasis Elimination Program for Region 8 in Cebu City from October 2 to 4; a Meeting on Integrated Helminth Control in Sorsogon on October 30 and 31, 2014; as well as a Ceremony to celebrate Davao Del Norte's achievement of eliminating LF as a public health problem on October 21, 2014. In November 2014, END in Asia also assisted the DOH to supervise and monitor an Orientation on Helminth Control for Local Governments in Cam Norte on November 13; monitoring of an LF antibody survey in Legaspi city from November 18 to 21; monitoring a TAS survey in Albay province from November 25 to 28; and participating in a SCH and STH Best Practices Meeting in Zamboanga City on December 8 and 9, 2014. Additional supervision activities included a Regional XII Orientation Workshop on TAS in Butuan City from April 7 and 8; a LF Free Provinces Monitoring visit in Puerto Princesa from April 14 to 16; and an Orientation Meeting on the National Parasite Prevalence Survey in Region V in Legaspi City on April 28, 2015, as well as an Orientation for the National Parasite Prevalence Survey for Regional three in Angelos City on May 19, 2015.

- While in the Davao region, the DOH has arranged to **Pre-test the new NTD Videos and seven short Spots** developed by the Knowledge Channel to complete the comprehensive set of audio/visuals addressing NTD work in the Philippines. The videos were tested among elementary and high school students in Digos, Davao del Norte from February 19 to 21, 2015. Results from the pre-testing were analyzed and incorporated as appropriate within the final versions.

- END in Asia has procured the printing of the five **Provincial NTD Maps** (wall maps) that were distributed to decision makers within the five provinces to ensure a basic understanding of the NTD control and elimination efforts in their respective areas and hopefully serve as a striking advocacy tool for continuing local support and funding.

- The Department of Health organized a **National Integrated Program Implementation Review on Selected NTDs** from April 20 to 24, 2015 in Davao City for approximately 35 participants from the central level DOH and well as DOH Regional Offices from around the country. The objectives included reviewing of regional accomplishments; discussing outstanding issues; providing updates on new NTD policies and guidelines; assessing the

current inventory of drugs and determining requirements for 2015; as well as crafting regional plans for LF, STH, and SCEP.

- The Department of Health also successfully organized the **4th National NTD Stakeholder Forum** at the Marco Polo Hotel in Cebu City from June 23 to 25, 2015. This year's theme was "Working hand in hand with LGUs" and the forum specially focused on the various activities needed to get the remaining 19 LF endemic provinces through the process to eliminate the disease as a public health issue as recommended by WHO. The costs of this major event were shared between the DOH and END in Asia. The two hundred plus participants included representatives from the DOH, regional health offices, and partner NGOs, private sector foundations, and civic organizations. Officials from the provincial, district and LGU levels in the remaining 19 LF endemic provinces were also invited. Besides the key note addresses by the vice governor and health secretary, there was a torch lighting ceremony and the signing of the Wall of Commitment. The series of IEC materials developed with the assistance of END in Asia, including the provincial maps, videos and a best practice publication were official launched during the event as well.

Vietnam:

The **National Institute of Malaria, Parasitology and Entomology** (NIMPE), Ministry of Health has organized a very strong and successful program to eliminate LF throughout the four endemic provinces, and was able to stop mass treatment in 2011. They are now well into the process to document elimination of the disease. STH, on the other hand, remains a concern. A total of 53 out of the 63 provinces in the country are endemic for STH, but NIMPE has only been able to support MDAs in 36 of these endemic provinces. During this reporting period, END in Asia did not provide any support for the STH control program. END in Asia is also working closely with the **National Institute of Ophthalmology**, Ministry of Health to implement a national assessment of trachoma to provide evidence of the status of the disease in the country as the basis to determine an appropriate response. END in Asia has provided the following assistance during this reporting period:

Trachoma:

- Work has continued throughout the past year on the analysis of the data from the **National Assessment of Trachoma** which was completed at the end of August 2014. A team on international Trachoma experts including WHO reviewed the data and identified several issues that needed further clarification, including a more intensive investigation of one potential Trachoma hotspot in Ha Giang province where several TF cases had been found, as well as further analysis of the TT results compared with local census data to determine the estimated number of TT surgeries that would be required to meet WHO criteria for the elimination of Trachoma as a public health issue.

- Following the development of a protocol with the assistance of the team of international trachoma experts and additional training of the survey teams, the National Institute of Ophthalmology implemented an "**Intensive Investigation of a Potential Trachoma Hotspot"** in Ha Giang province from January 26 to 30, 2015. This investigation involved the clinical examination of approximately 350 children between the ages of 1 and 9 years old from seven villages in the potential hotspot, with conjunctival swabs taken from all suspected positive cases for laboratory analysis. A total of 32 children, out of the 392 examined, presented with clinical signs of infection that may be caused by *chlamydia trachoma*.

Laboratory assessment of the conjunctival samples taken from each of these children was completed at the Microbiology Laboratory at the National Lung Hospital with PCR testing using the appropriate commercially available assays. Results determined that these infections were indeed *chlamydia trachoma*, but expert opinion suggests that these are infections of paratrachoma which does not cause blindness and is not a public health concern. To confirm that lack of transmission of trachoma in the area, a **Follow Up Investigation** in the same seven villages in Ha Giang province was organized from August 9 to 15, 2015. Results were surprising; among the 467 children examined, 76 were found to have TF (16.3%) which would indicated that active transmission is still occurring, probably from outside of the immediate area. The trachoma experts are being consulted, and additional survey work as well as some form of mass treatment will most likely be recommended. Analysis of the TT results from the National Trachoma Assessment have also been completed and compared with local census data to determine the estimated number of TT surgeries that are now required to meet WHO criteria for the elimination of Trachoma as a public health issue in Vietnam. A Final Report of the comprehensive National Assessment has been completed by our international trachoma experts and submitted to the NIO for their review.

Lymphatic Filariasis:

- The shipment of **ICT Test Kits** provided by END in Asia to support the final round of Transmission Assessment Surveys in Vietnam arrived in country in January 2015, and were successfully processed through customs.

- NIMPE then organized **Transmission Assessment Surveys** (TAS) in Ninh Thuan and Ha Nam provinces in late April 2015, followed by surveys in Khanh Hoa and Hung Yen provinces in May 2015. Results of all four surveys indicated a total absence of transmission throughout all four evaluation units. These four TAS Surveys represented the last round of surveillance which was required by WHO to enable Vietnam to declare that LF has been eliminated as a public health problem in the country.

- Technical Assistance was provided by Dr. Ramaiah Kapa from May 24 to June 7, 2015 through the ENVISION/RTI Technical Assistance Mechanism to assisted NIMPE to compile complete documentation and draft a formal **LF Elimination Dossier** for submission to WHO.

- NIMPE also organized a national level **LF Technical Meeting** on June 3 and 4, 2015 in Hanoi for 35 participants from NIMPE, the Ministry of Health, and selected provinces, as well as USAID and WHO. Dr. Ramaiah, our regional LF expert, also presented. The major focus of the meeting was the review of the LF elimination program to date; identification of further activities needed such as a routine, though simple post TAs surveillance system and appropriate morbidity management; and consensus to proceed with the finalization of a Dossier on the Elimination of LF in Vietnam to be submitted to WHO. Dr. Ramaiah is taking the lead on drafting the dossier document, which will then be reviewed and approved by NIMPE and the MOH before submission to WPRO. All participants fully agreed that Vietnam had very successfully concluded a major effort over many years to eliminate LF as a public health problem in the country.

III. Environment Compliance Status

During this reporting period, FHI 360 monitored the implementation of all END in Asia supported activities in the field that were identified as having the possibility of a negative impact on the environment within the Supplemental Initial Environmental Examination (SIEE) for each country, and found them in full compliance with all environmental policies and standard operating procedures from the respective Ministries of Health, National Governments, WHO, and USAID.

For all six focus countries, Bangladesh, Cambodia, Laos, Papua New Guinea, the Philippines and Vietnam, FHI 360 has obtained a copy of the relevant official government guidelines for the management of medical waste, and has found them to be in complete accord with WHO international standards.

For all six countries, FHI 360 monitored the field implementation of each of the various surveys and MDAs that involved generation of medical waste and found that all implementation was in compliance with the relevant government guidelines.

IV. Procurement of Pharmaceuticals

Based on the approved Country Workplans for each focus country, END in Asia calculated the amount of pharmaceuticals that were needed to support the various activities of each National NTD Program. During Year Five, these included ICT Rapid Test Kits for the LF surveys in Bangladesh, Cambodia and Vietnam, as well as Brugia Test Kits for Cambodia and Vietnam. Procurement of 520 BinaxNOW ICT Test Kits (13,000 tests) from Alere North America for Bangladesh was completed with delivery in November 2014. A shipment of 310 ICT Test Kits (8,000 tests) was delivered to Cambodia in early December 2014, and 100 ICT Test kits (2,500 tests) were delivered to Vietnam in January 2015. A shipment of 65 Brugia Test Kits (1,625 tests) from Reszonics Ltd in Malaysia was received in Vietnam in January 2015 and another shipment of 80 Brugia Test Kits (2,000 tests) was received in Cambodia in May 2015.

Attachment 1

Key Performance Indicators

Performance indicators as identified in the END in Asia Workplan Year Five to be used by FHI 360 to monitor the implementation process and program outcomes as listed below.

Table 1: Proposed Monitoring Indicators to be used by FHI 360

Indicator	Disaggregation	Source	Target	Achievement to Date	Responsible Party
Component I: Grant Issuance and Management - Grant Monitoring					
Number of FOGs signed	By organization	program records	1 – NIMPE 1 – NIO 1- Bangladesh	1 – NIMPE 1 – NIO 1- Bangladesh	FHI 360
Number of grantees submitting timely implementation reports	By organization	program records	3	3	
Number of National Programs submitting data for END in Asia Workbooks	By country	program records	6	6	
Number of people trained	By country	Implementation Reports	TBD	Cambodia – 3,512 trained Laos – 1,122 trained PNG – 72 trained	
Number of FHI organized and led monitoring visits to activities	By country	program records	1 per major activity in each country	1 per major activity in each country	
Proportion of National Programs that implement according to the timelines in their workplans	By country	country reports	100%	100%	
Number of National Programs completing 100% of planned activities	By country	Implementation Reports	6	6	FHI 360

Indicator	Disaggregation	Source	Target	Achievement to Date	Responsible Party
Component II: Coordination of FHI Support, Technical Assistance and Capacity Building - Monitoring Collaboration with National NTD Programs					
Percentage of FHI support activities implemented	By country	Semi Annual Reports	100%	Bangladesh – 100% Cambodia – 100% Laos – 100% PNG – 100% Philippines – 100% Vietnam – 80%	FHI 360
Proportion of TA requests addressed	By country and technical area	program records	100%	100%	
Number of NTD specific TA requests referred to USAID	By country and TA type	program records	TBD	Cambodia – 2 LF; 2 Trachoma Laos – 2 Trachoma Philippines – 1 LF Vietnam - 1 LF; 2 Trachoma	
Component III: Data Management, Documentation and Dissemination – USAID/RTI Standard Coverage and Treatment Indicators					
Number of countries with complete, semi-annual END in Asia Workbooks	By country	country reports	6	6	FHI 360
Number of countries in compliance with their EMMP	By country	EMM Reports	6	6	

Attachment 2

MDAs supported by END in Asia (October 1, 2014 to September 30, 2015)

	# of Provinces	# of Persons at Risk	# of Persons Targeted	# of Persons Treated	# of Treatments	Epidemiological Coverage	Program Coverage
Lymphatic Filariasis							
• Bangladesh	1	3,415,912	3,090,134	2,796,478	2,796,478	81.9%	90.5%
• PNG	1	5,200,000	156,012	NA	NA		
• Philippines	22	20,343,870	20,278,097	14,949,615	14,949,615	73.5%	73.7%
Total		**28,959,782**	**23,524,243**	**17,746,093**	**17,746,093**		
Soil Transmitted Helminthes							
• Laos	17	2,089,147	2,089,147	1,803,527	1,803,527	86.3%	86.3%
• Philippines	80	100,617,630	48,870,522	NA	NA		
Total		**102,706,777**	**50,959,669**	**1,803,527**	**1,803,527**		
Schistosomiasis							
• Cambodia	2	82,000	80,000	71,382	71,382	87.1%	89.2%
• Philippines	28	2,480,360	2,027,776	970,565	970,565		
Total		**2,562,360**	**2,107,776**	**1,041,947**	**1,041,947**		
Grand Total		**134,163,146**	**73,252,564**	**20,591,567**	**20,591,567**		

MDAs funded by END in Asia (October 1, 2014 to September 30, 2015)

	# of Provinces	# of Persons at Risk	# of Persons Targeted	# of Persons Treated	# of Treatments	Epidemiological Coverage	Program Coverage
Schistosomiasis							
• Laos	1	129,410	92,613	68,844	68,844	53.2%	74.3%
Lymphatic Filariasis							
• Laos	1	137,089	121,531	121,019	121,019	88.3%	99.6%
Grand Total		**266,499**	**198,207**	**189,863**	**189,863**		

Section Two

Comprehensive Country Summaries

Comprehensive Summary

National NTD Response in Bangladesh

Bangladesh Summary

The National Filariasis Elimination and STH Control Program (National Program) has been established within the Disease Control Unit of the Directorate General of Health Services, Ministry of Health and Family Welfare in Bangladesh and is responsible for the overall design and management of national efforts to respond to these two diseases. The National Program works through the established health system to implement their activities, from the national, regional, district, upazila levels down to the union or community level. They also are able to access the research, drug control and logistics, national health data base, and other support functions of the Ministry of Health and Family Welfare as needed.

The National NTD Program in Bangladesh is successfully implementing a strong, coordinated response to control and eliminate two major NTDs, Lymphatic Filariasis and Soil Transmitted Helminthes, which were previously endemic across most of the country. The large majority of NTD program funding is provided by the government, through their recurrent national budget. The National Program currently receives other assistance, including funding from a World Bank loan through the Ministry of Health budget; technical assistance and some operational support for MDAs, coverage surveys, and transmission assessment surveys from the Center for Neglected Tropical Diseases (CNTD), Liverpool School of Tropical Medicine; and community support assistance from JICA volunteers in four districts. The National Program continues to do an excellent job of coordinating the variety of assistance it receives and incorporating the various activities within a comprehensive, unified program.

END in Asia began collaboration with The National Filariasis Elimination and STH Control Program in Bangladesh in 2011 following extensive discussion and analysis of program needs. Since then the project has provided assistance to (1) strengthen monitoring and evaluation of all program activities through increased supervision, post MDA surveys, and development of a comprehensive NTD database; (2) implement a series of surveillance surveys to measure the changes in prevalence of lymphatic filariasis and soil transmitted helminthes, and track the impact of the MDAs; (3) strengthen program management through a variety of advocacy, orientation and organizational meetings; (4) pilot an innovative training in LF morbidity control for health care provides including a training of trainers; and (5) expand and improve communications through the mass media and printed IEC materials based on a comprehensive communication strategy.

Lymphatic Filariasis Elimination Program

Responding effectively to the WHA resolution passed in 1997, which called upon the member states to take necessary steps to eliminate LF as a public health problem, the MOH, Bangladesh, launched its MDA based LF elimination program in 2001. From the beginning, the government followed the technical guidelines provided by WHO and framed a policy to eliminate LF by the year 2015, which has subsequently been changed to 2018.

Prioritization of Districts: The program designated the 'district' as the intervention unit for the coordination and implementation of LF MDA. To utilize limited resources judiciously, prioritization of districts for implementation of MDA become necessary. In accordance with WHO guidelines, Ag surveys were carried out in 2002-2004. Results led to classification of Bangladesh's 64 districts into the following three categories:

(a) Non-endemic districts: Of the 64 districts in the country, 30 districts were declared non-endemic, 13 based on historical evidence (no or low number of clinical cases) and 17 on the basis of Ag prevalence, which was <1.0%. During a program review in 2014, an international LF expert recommended that the National Program consider re-mapping several of these non-endemic districts to confirm their status in preparation for the verification of elimination by WHO. A number

of these non-endemic districts either border endemic districts, originally had discordant results from the Ag and ICT testing, and/or have had recently reported cases of LF. With assistance from END in Asia, the National Program has remapped three districts during 2015, using a new methodology developed by the Global Taskforce and piloted in Bangladesh. Approximately six additional districts will need to be re-mapped in following years.

(b) Very low-endemic districts: Fifteen districts showed ≥1.0% Ag prevalence in the surveys carried out in 2002-04, which is the WHO threshold for launching MDA. To initiate MDA in these 15 districts, however, the program felt it necessary to generate additional epidemiological evidence. Hence, microfilaria (Mf) surveys were carried out twice in this set of districts. In the surveys carried out during 2002-04, 22 sites in 13 districts were evaluated. Subsequent surveys carried out during 2009-2010 evaluated 30 sites in 15 districts. In each site and in each survey 500 people were sampled. Only two sites in one district of the 2002-04 survey showed microfilaraemia (0.60% and 0.40%) and all other sites in both the surveys found no Mf-positives. Thus, this group of districts appear to have very few Mf carriers, while showing ≥1.0% antigenaemia prevalence (in all age groups). This posed a challenge to interpreting WHO guidelines in order to make an appropriate decision to implement MDA in these districts. That is, whether to follow the WHO criterion of ≥1.0% Ag rate, or not, considering the ≤1.0% (almost 0%) Mf rate, which is the WHO criterion for exclusion of districts from MDA. Ultimately, the National Program decided to follow the recommendations of WHO and other NTD experts and did not organize MDAs in these districts. Beginning in 2014 with the assistance of END in Asia and CNTD, the National Program organized TAS surveys in each of these low endemic districts, all with negative results; information that will be critical when Bangladesh submits it dossier to WHO to verify elimination of LF across the country.

(c) Endemic districts: Nineteen districts were declared endemic based on historical and/or empirical evidence, including the presence of a considerable number of people affected with clinical disease and/or high prevalence of microfilaraemia observed in earlier epidemiological surveys respectively.

MDA Activities: MDA was initiated in 2001 in just one of the 19 endemic districts, Panchgarh, located in the highly endemic northern region. Encouraged by the success of the MDA strategy in Panchgarh district, the government extended the program to all the 19 endemic districts in a phased manner. By 2008, the program was in place in all 19 districts, as shown in Table 2 and Table 3 below. In Bangladesh LF MDA is implemented in the month of November every year; using a combination drug regimen of DEC and Albendazole.

Table 1: Status of MDA in 19 Endemic Districts by year

	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	Total
Barisal Division															
Barguna					x	x	x	x	x	x					6
Barisal								x	x	x	x	x			5
Jhalokati								x	x	x	x	x			5
Patuakhali					x	x	x	x	x	x					6
Pirojpur							x	x	x	x	x				5
Khulna Division															
Chuadanga							x	x	x	x	x	x			6
Kushtia							x	x	x	x	x	x			6
Meherpur				x	x	x	x	x	x	x					7
Rajashahi Division															
Chababganj				x	x	x	x	x	x	x	x				8
Pabna							x	x	x	x	x	x			6
Rajashahi					x	x	x	x	x	x					6

	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	Total
Shirajganj						x	x	x	x	x	x				6
Rangpur Division															
Dinajpur					x	x	x	x	x	x					6
Kurigram				x	x	x	x	x	x	x	x	x	x		10
Lalmonirhat		x	x	x	x	x	x	x	x	x	x	x	x		12
Nilphamari		x	x	x	x	x	x	x	x	x	x	x	x		12
Panchagarh	x	x	x	x	x	x	x	x	x	x	x				11
Rangpur					x	x	x	x	x	x	x	x	x	x	10
Thakurgaon					x	x	x	x	x	x	x				7

Table 2: Progress of MDA to Eliminate LF

Year	Population at Risk	No. of IUs Targeted	Population Targeted	No. Treated	TC %	GC %
2001	30,100,571	1	846,880	808,770	96	5
2002	30,514,157	3	3,901,280	3,661,102	94	16
2003	30,933,445	3	3,896,295	3,622,518	93	16
2004	31,358,485	6	8,339,233	7,737,013	93	32
2005	31,789,365	12	20,160,304	18,425,375	91	63
2006	32,226,166	13	24,067193	22,189,349	92	68
2007	32,668,968	16	30,952,707	28,320,039	91	84
2008	34,240,881	19	34,240,881	30,952,172	90	100
2009	35,060,360	19	35,060,360	32,641,470	93	100
2010	36,300,000	19	36,300,000	31,060,000	86	100
2011	27,010,000	14	27,010,000	22,143,169	82	100
2012	16,674,290	9	16,674,290	14,410,152	87	100
2013	8,660,332	4	7,522,832	7,133,685	95	100
2014	3,415,912	1	3,090,134	2,796,478	90	100

Treatment coverage: The treatment coverage reported by the district (IU) level program managers has ranged from 82% to 96% over many years. This level, however, is widely considered to be an overestimation and represents the number of pills distributed. Therefore, the national program, with partner NGOs, undertook independent surveys following WHO guidelines to assess treatment coverage. These surveys carried out by the program personnel in 2008 and 2009 revealed a coverage of 79% and 86% (ingestion of drugs) respectively.

To supplement this information, a bilateral partner (JICA) also carried out the treatment coverage survey, using WHO guidelines, of the MDA implemented in November 2010 in 5 districts of the highly endemic northern region. Under the survey, between 956 and 975 people were sampled per district. The survey highlighted that the program was able to distribute the drugs to 77% to 90% of the population, a very impressive achievement. The survey also identified some operational issues for further improvement of the MDA program. These included better communication and coordination among national, district and local level program personnel, strengthening of district level program management and preparation, improvement of IEC activities and directly observed treatment to improve compliance with treatment.

In 2012, END in Asia also supported the implementation of a Post MDA Survey for LF to assess the quality of the MDA in Kurigram District, identify areas for improvement in the next round, and validate reported coverage results, which confirmed a MDA coverage rate of 72% among the eligible

target population. Similar surveys were carried out in Panchagarh, Thakurgaon, Nilphamari and Lalmonirhat Districts with funding from JICA.

Although high coverage rates have been achieved in most districts, there have been certain districts in Rangpur Division where coverage was inconsistent over the years. This resulted in the need to continue MDAs well beyond six years. With assistance from END in Asia, special efforts have been taken by the National Program during recent years to increase motivation and improve the capacity of lower level managers and implementers in these areas, to better supervise implementation in the field, and to provide better quality promotion and IEC materials explaining the importance of treatment for LF. These efforts have proven successful in most districts, with coverage rates meeting expectations, which enabled the National Program to stop implementing MDAs in three of the four relevant districts. However, coverage rates during the November 2013 MDA in one district, Rangpur District, were still below adequate levels at only 58%, so one additional round of MDA in November 2014 was required in order to meet WHO criteria for stopping the MDA. The National Program, with the assistance of END in Asia, subsequently intensified their efforts to further strengthen management of the MDA in Rangpur, including organization of orientation/organizational meetings for district and sub-district LF program managers, supervision for the national level team during the MDA, and intensive community mobilization before and during the MDA with a variety of local mass media support – all with excellent results.

Transmission Assessment Surveys (TAS): As considerable progress was achieved with high quality MDA throughout the endemic areas, the National Program developed a systematic and well organized TAS plan to measure the success of the MDAs and to provide the critical evidence to deciding when to stop MDAs in each district. Great effort has also been put into ensuring that the required human and financial resources are available as needed.

The National Program has determined that a Pre-TAS Mf survey using night blood should be conducted in each district once the district has achieved the WHO recommended standard of at least six rounds of MDA with a minimum coverage of 65%. If the results are below the threshold level, the National Program then proceeds with the implementation of a formal TAS using ICTs. Since several districts have a population larger than the WHO recommended size for a LF Evaluation Unit (EU), these districts have been divided into two EUs, with one TAS organized in each unit.

The first series of TAS (USAID: Stop MDA TAS) were organized in five districts in 2011, with five more districts surveyed in 2012, five more districts in 2013 and the remainder in 2014. All TAS surveys to date have shown results well below the established threshold to stop MDA, and MDAs have subsequently been stopped, except in Rangpur where one additional round of MDA was required in 2014. (Please refer to Table 4: Schedule for TAS and Pre-TAS, below.)

Once MDAs have been stopped in a district, WHO recommends that additional TAS surveys (USAID: TAS 1 and 2) be implemented after two to three years, and again after five to six years in order to ensure that transmission continues to be interrupted. The National Program has proceeded with the implementation of these TAS surveys as planned with the assistance of END in Asia and CNTD, including the procurement of the required ICT tests. Great effort and significant resources will now be required by the National Program to continue with the series of TAS surveys that are required through 2018 in order to measure the success of the LF MDAs, determine when to stop the MDAs, and provide sufficient evidence that transmission remains interrupted in all the endemic districts as required by WHO to verify elimination.

Table 3: Schedule for TAS (and Pre-TAS) Surveys

No.	District	Pre-TAS (Mf survey)	Stop MDA TAS	TAS 1	TAS 2
1.	Meherpur	2011	2011	2013	2015
2.	Barguna	2011	2011	2013	2015
3.	Patuakhali	2011	2011	2013	2015
4.	Dinajpur – EU A	2011	2011	2013	2015
	Dinajpur – EU B	2011	2011	2013	2015
5.	Rajshahi – EU A	2011	2011	2013	2015
	Rajshahi – EU B	2011	2011	2013	2015
6.	Shirajgonj – EU A	2012*	2012*	2015*	2017
	Shirajgonj – EU B	2012*	2012*	2015*	2017
7.	Pabna – EU A	2012*	2012*	2015*	2017
	Pabna – EU B	2012*	2012*	2015*	2017
8.	Kushtia	2012*	2012*	2015*	2017
9.	Chuadanga	2012*	2012*	2015*	2017
10.	Pirojpur	2012*	2012*	2015*	2017
11.	Chapainawabganj	2013*	2013*	2015	2017
12.	Panchagar	2013*	2013*	2015	2017
13.	Thakurgaon	2013*	2013*	2015	2017
14.	Barisal – EU A	2013*	2013*	2015	2017
	Barisal – EU B	2013*	2013*	2015	2017
15.	Jhalokhati	2013*	2013*	2015	2017
16.	Rangpur – EU A	2014*	2014*	2016	2018
	Rangpur – EU B	2014*	2014*	2016	2018
17.	Kurigram – EU A	2014*	2014*	2016	2018
	Kurigram – EU B	2014*	2014*	2016	2018
18.	Lalmonirhat	2014*	2014*	2016	2018
19.	Nilphamari	2014*	2014*	2016	2018

**Funded or to be funded by USAID/END in Asia*

Re assessing Very Low Endemic Districts: As mentioned above, the National Program, with the assistance of END in Asia and CNTD, has addressed a major, long standing issue concerning the fifteen districts that were originally assessed as Very Low Endemic Districts both at baseline and through additional Mf surveys carried out between 2008 and 2010, and which have never had MDAs. For several years the WHO RPRG and a number of international NTD experts had recommended that Bangladesh organize surveys to re-assess the situation in these districts, with most experts suggesting that ICT tests be used, but there was no consensus on the appropriate sampling methodology or sample size to be used. Since clear guidance from WHO was lacking, it was decided to proceed with full TAS surveys in each of these 15 low endemic districts in order to provide undisputable evidence that transmission is no longer occurring. Since Bangladesh is rapidly approaching its target date of 2018 for LF elimination, the National Program requested assistance from END in Asia as well as CNTD to fund the implementation of these surveys in phases beginning in 2014, based on the following plan (Table 5 below).

Table 4: Plan to Re-assessment Surveys for Very Low Endemic Districts.

No.	District	2014	2015
1.	Begerhat	X*	
2.	Narial	X*	
3.	Feni	X*	
4.	Laxmipur	X*	
5.	Bandarban	X*	
6.	Bogra	X	
7.	Narayanganj	X	
8.	Narshingdi		X
9.	Gijipur		X
10.	Jamalpur		X
11.	Habignaj		X
12.	Jhenaidah		X
13.	Gopalganj		X
14.	Munshiganj		X
15.	Dhaka		X

* *The surveying of these districts has been completed with funding from END in Asia.*

Remapping of Non-endemic Districts: Also, as mentioned above, several international experts have been concerned about the true endemicity of several of the districts that were previously classified as non-endemic, due to being surrounded by endemic areas, having discordant Mf and ICT results, and/or having LF positive cases appearing at local clinics. Using a new methodology developed by the Global Taskforce and USCDC, END in Asia has funded the implementation of the pilot re-mapping

of three districts that were previously determined to be non- endemic, but are now suspicious. The results of this remapping will become an important part of the effort to document elimination and verify the status of non-endemic areas within the WHO dossier for elimination. The remapping was successfully completed in Natore, Tangail and Sherpur districts in August 2015. Results showed a complete lack of any positive cases and clear evidence of their continuing status as non-endemic.

Training in Morbidity Control: END in Asia also assisted the National Program to organize a Training Course in LF Morbidity Control which has been implemented through a series of regional trainings for government health workers across three districts endemic for the disease. The one day course included theoretical presentations, practical demonstrations and hands-on examinations involving detection and diagnosis of actual cases. The courses were organized in Thakurgaon, Panchagarh and Nilphamari Districts in 2012 and in Kurigram, Lalmonirhat and Ragpur Districts in 2013. Besides a detailed explanation of LF morbidity control management, participants were also taught proper patient searching techniques and completed a micro-plan for LF patient management for each of their catchment areas.

LF Program Data Base: END in Asia also assisted the National Program to develop a computer-based system facilitate the collection and management of LF program data. This user-friendly data base has been instrumental in enabling the National Program to compile all of the relevant data from reams of paper-based reports submitted over many years and to consolidate all of this information into one manageable system. This has also allowed the program to identify what historical data was missing or inconsistent, and with assistance from END in Asia, to organize visits to selected districts to search for missing data and reconcile any irregularities. The data base has also enabled the National Program to easily compile routine implementation reports from the field and generate the required reports to the MOH and WHO.

STH Control Program

Responding to the WHA resolution in 2001, Bangladesh has made consistent efforts towards establishing and managing a national STH control program. As a first step, a pilot school-based MDA program was implemented in 2005 in three districts. During 2006-07, the program was extended to 16 districts and by May 2008 to 24 districts. A national program was formulated, approved and included in the National Guideline and Strategy for Prevention, Control and Elimination of Parasitic Diseases in Bangladesh in September 2008.

The salient features of the program are:

- MDAs to elementary school children (1-5 classes or 5/6-10/11 age-group) have been initiated in all 64 endemic districts;
- on account of high endemicity, MDA activities are carried out twice a year;
- originally the school based MDAs were implemented every year in May and November, but this was officially changed in 2012 to April and October to better fit into the academic year;
- Albendazole (400 mg) and/or Mebendazole (500 mg) are used in the MDAs;
- the program is implemented in close collaboration with the Department of Elementary Education;
- efforts are continually being made to provide adequate sanitary facilities and health education on behavior change in all schools.

STH MDA Activities: The first National Deworming Day was observed on 1 November 2008. Subsequently the MDAs have been implemented every six months. District and Upazila level program managers are responsible for coordinating the program in their relevant areas. All schools

run by the Government, Community, NGOs, private managements and kinder garden schools and Madrasas take active part in the STH Control Program. More than 22 million children studying 1-5 standard, or aged 5/6-10/11 have been targeted during MDAs between 2008 and 2015. The treatment coverage reported and compiled on the basis of reports submitted by the IUs, ranged from 94% to 98% (Table 6). These treatment coverage figures are considered to be high and based on the number of tablets distributed. The corresponding STH infection rate has fallen from 78.2% in 2005 to 15.7% in 2013.

Table 5: Details of MDA Program Reported Coverage

Year	No. of Districts	No. of Schools	No. of Students Targeted	Treated	Treatment Coverage
2008	64	92,270	15,743,159	15,482,778	94
2009	64	92,270	19,303,404	19,101,496	98
2010	64	92,274	22,017,040	21,796,874	99
2011	64	92,289	21,776,822	21,070,693	97
2012	64	92,289	22,263,213	22,040,581	99
2013	64	NA	25,089,864	23,002,053	92
2014	64	NA	24,898,332	22,669,778	91

STH Follow Up Surveys: END in Asia assisted the National Program to organize a series of STH Follow Up Surveys following the May 2012 STH MDA based on standard WHO protocols to track the impact of the MDAs as part of a process to continually improve both quality and coverage of the program. Stool samples from 50 elementary school students were examined in each of five district using the Kato Katz method, with a wide variation in results ranging from 2.0% to 47% testing positive for STH. The variation in results was most likely due to differences in coverage rates among the schools/districts, as well as the inevitable swift reinfection of worms following the MDAs because of the lack of proper sanitation and clean water supply in most rural areas.

Communications: END in Asia has also assisted the National Program to greatly expand and improve program communications for both STH and LF. Following a complete review of the previous communications approaches and IEC materials used by the National Program, a Consultant for Communications, Shahreen Haq, developed a Comprehensive Communication Strategy for NTDs which became the basis for the development of higher quality materials and more efficient use of appropriate media channels to promote both the STH and LF MDAs as well as important associated behavior change. A wide variety of materials were developed and disseminated, including flip charts, flyers, leaflets, posters, and banners; and promotional advertisements were placed in national mass media, including newspapers, radio and TV prior to each round of MDA. New materials were also developed to support efforts to improve the care and management of LF morbidity cases, including a promotional flyer and a booklet targeting health care workers at the field level. In addition, two full length video documentaries on LF and STH were produced that have been used widely at the community level to build awareness and promote appropriate behavior change among a variety of target groups including government officials, local leaders and communities in all endemic areas, as well as the general population.

Comprehensive Summary

National NTD Response in Cambodia

Cambodia Summary

The **National Center for Malaria Control, Parasitology and Entomology (CNM),** Ministry of Health in Cambodia is the unit directly responsible for organizing the national response for lymphatic filariasis (LF), soil transmitted helminthes (STH) and schistosomiasis, as well as wide variety of other Neglected Tropical Diseases (NTDs) in the country. The **National Eye Health Program** (NEHP) also within the Ministry of Health is responsible for the control and elimination of trachoma as well as the management of many other eye health issues. The national level agencies work closely with counterparts at the provincial and district level, and implement field level activities through coordination with the network of community health centers across the country.

Since June 2012, END in Asia has assisted CNM and the NPEH at the Ministry of Health to strengthen the quality and management of their NTD programs through such activities as: increased supervision, organization/management workshops and meetings, and more frequent dialogue with program implementers in the field; implementation of the appropriate coverage, prevalence and sentinel/spot check surveys as recommended by WHO for each of the diseases; refresher workshops and other efforts to motivate teachers and school administrators throughout the national school system to actively support the STH, SCH and LF MDAs, as well as improved information, education and communications (IEC) materials; and the implementation of a National Trachoma Assessment to obtain reliable data on the status of the disease to enable the country to develop an appropriate response. USAID, through END in Asia, is the only source of additional operational funding available to the National NTD Program.

Lymphatic Filariasis

Cambodia is committed to achieving the elimination of LF as a public health concern by 2015 in line with the Global Program to Eliminate Lymphatic Filariasis. Mapping of all endemic areas with immunochromatographic card test (ICT) testing as well as microfilaria (Mf) blood film examinations was completed in 2004. At that time, a total of 18 districts in four provinces, namely, Ratanakiri, Stung Treng, Preah Vihear and Siem Reap, were identified as the areas with on-gong transmission. The total population at risk in the endemic districts is 474,800. These 18 districts were grouped into six Implementing Units.

Table 1: LF Implementing Units

	Implementing Unit (IU)	Districts	Population
1	Ratanakiri Province	Andoung Meas, Banlung, Bar Kaev, Koun Mom, Lumphat, Ou Chum, Ou Ya Dav, Ta Veaneng, Venun Sai	125,934
2	Stung Treng Province	Sesan, Siem Bouk, Siem Pang, Strung Treng, Thala Barivat	95,843
3	Siem Reap District		148,102
4.	Angkor Chum District		69,431
5.	Varin District		25,527
6.	Rovieng District		38,145

The first round of MDA with Diethylcarbamazine (DEC) and Albendazole (ALB) was conducted in 2005 in all six implementation units in the four provinces. The reported coverage achieved among the eligible population has been between 75% and 89%, with routine coverage assessment surveys confirming these rates (Table below). Further, MF surveys carried out in sentinel sites indicate 100% reduction rate of Mf in all IUs after two rounds of MDA (Table below).

Table 2: MDA Coverage 2005 – 2009 (Five Rounds)

IU	Total Population	2005 Coverage	2006 Coverage	2007 Coverage	2008 Coverage	2009 Coverage
Strung Treng	95,843	79.40%	77.40%	86.30%	87.30%	81.30%
Ratanakiri	125,934	77.40%	79.40%	80.20%	80.20%	89.50%
Siem Reap	148,102	78.00%	78.00%	80.40%	81.60%	83.60%
Angkor Chum	69,431	76.10%	76.10%	82.00%	80.70%	77.80%
Varin	25,527	81.30%	81.30%	79.80%	76.70%	88.40%
Rovieng	38,145	83.50%	83.50%	78.60%	78.40%	82.80%

Table 3: Prevalence of Microfilareamia in Sentinel Sites

IU	Pre-MDA Prevalence before 2005	2007		2008		2009	
		Sentinel Surveillance		Sentinel Surveillance		Sentinel Surveillance	
		# Tested	% Positive	# Tested	% Positive	# Tested	% Positive
Stung Treng	0.80%	1,015	0%	900	0%	1,020	0%
Ratanakiri	2.75%	1,000	0%	943	0%	995	0%
Siem Reap	0.80%	978	0%	1,007	0%	996	0%
Angkor Chum	0.80%	99	0%	952	0%	998	0%
Varin	0.40%	535	0%	987	0%	1,015	0%
Rovieng	0.40%	535	0%	1,002	0%	995	0%

Following the successful implementation of five rounds of MDAs in all endemic areas, in 2010 CNM organized a series of Transmission Assessment Surveys (USAID: Stop MDA TAS) across all endemic areas to determine if the MDAs could be stopped, as recommended by WHO. Results of the six TAS surveys indicated that infection levels were well below the established threshold (Table 7), and that MDAs could be safely stopped. A second round of TAS surveys (USAID: TAS I) was organized in 2013 with funding from USAID/END in Asia including the procurement of the required ICT rapid tests, again based on WHO recommendations, to determine if transmission remained interrupted. In line with the recently updated guidelines from WHO, the six implementing units were reorganized into four Evaluation Units (EUs) for this series of TAS. The WHO survey sample builder was used to

determine the sampling frame and sample size of these of the TAS surveys. Again, the results from all four TAS surveys indicated that no transmission was taking place.

END in Asia also funded a series of special investigations of suspected LF cases in several communities during 2014, during which CNM was able to offer appropriate care for LF patients previously infected, though there was no evidence that transmission was currently taking place and therefore no need for organizing treatment.

A final round of TAS surveys (USAID: TAS 2) was implemented in 2015, with the assistance of END in Asia. An additional TAS survey using the Brugia Rapid Test was also organized in Rattanakiri Province in July 2015 to obtain evidence concerning the status of transmission of this variation of the disease as well. Results were conclusive. Transmission of LF has been interrupted across all previously endemic areas, and Cambodia is eligible to declare that LF is no longer a public health concern in the country, though continual surveillance and management of current LF cases will still need to be organized on a regular basis.

Table 4: Transmission Assessment Surveys in Cambodia, 2010 to 2015

	2010 – Stop MDA TAS			2013 – TAS One			2015 – TAS Two		
	# Tested	# Positive	Antigenemia (%)	# Tested	# Positive	Antigenemia (%)	# Tested	# Positive	Antigenemia (%)
Strung Treng	900	3	0.3	1,750	0	0%	1,582	0%	0%
Ratanakiri	900	4	0.4	1,805	0	0%	1,677	0%	0%
Siem Reap	900	6	0.6	1,750	0	0%	1,728	0%	0%
Angkor Chum	900	1	0.1						
Varin	900	2	0.2						
Rovieng	900	2	0.2	1,586	0	0%	1,531	0%	0%

END in Asia has also arranged for the assistance of Dr. Ramaiah Kapa, an international LF expert, through the USAID-funded ENVISION project, to compile the comprehensive LF Elimination Dossier which is required by WHO to enable them to verify the elimination of the disease. During visits in March and June 2015, Dr. Ramaiah worked closely with CNM to prepare the dossier for submission to the WHO Regional Office in Manila in July 2015.

Trachoma

Prior to END in Asia, the status of trachoma in Cambodia was unclear. There was historical evidence that trachoma had been present in several areas in Cambodia, but there no clear information concerning the current prevalence of active trachoma in the country or whether a public health intervention was required. Because of this situation, the NEHP requested assistance from END in Asia to design and implement a National Trachoma Assessment.

In early 2013, END in Asia obtained the assistance of an international expert in trachoma, Dr. Anthony Solomon, to design a protocol for the national assessment; and with the collaboration of the Global Trachoma Mapping Project arranged for the training of a team of Cambodian trachoma eye graders in Ethiopia. A further training of the survey teams, including one certified trachoma eye

grader and one data recorder in each team, was then organized in Cambodia with the assistance of two other international experts in May 2014.

The implementation of the actual National Trachoma Assessment utilizing the internationally recognized methodology developed by the Global Trachoma Mapping Project and WHO, began in May 2014 and continued through March 2015. A total of 16 evaluation units were surveyed, which represented over half of the country and all geographic and environmental regions, and included all areas where there was historical evidence or suspicion of trachoma. These surveys included clinical eye examinations of all children between the ages of 1 and 9 years old and all adults over the age of 15 years in selected households. Over 31,000 children were examined, and 24,500 adults. No significant levels of active trachoma were found anywhere in the country, and only very small and non-significant levels of Trachoma Trichiasis among adults were present. Additional special intensive investigations were also organized in three villages where there was definite historical evidence of high rates of active trachoma infection during rapid surveys in 2000 and 2004. No active cases were found in any of these areas, which further confirms the results of the National Trachoma Assessment.

END in Asia has also provided the technical assistance of two international trachoma experts, Susan Lewallen and Paul Courtright, to review the final results of the National Trachoma Assessment and draft a comprehensive final report for the NEPH to submit to the WHO Regional Office in Manila. This Final Report was officially shared during a Dissemination Workshop on July 9, 2015 by the Minister of Health. It is now very clear, based on irrefutable evidence, that trachoma is not a public health concern in Cambodia.

Schistosomiasis

Schistosomiasis endemicity in Cambodia is restricted to two provinces, Stung Treng and Kratie, in the Mekong River Basin where ecological conditions for transmission continue to exist. In Cambodia the disease is caused by *Schistosoma mekongi* and the intermediate host is *Neotricula aperta*, a river snail that lives in the fissures of partially submerged rocks. Animal hosts, mainly dogs, appear to be an important reservoir host in the maintenance of transmission. The human population at risk is estimated at over 80,000.

The first case of Schistosomiasis in Cambodia was discovered in Kratie in 1968, and a pilot control project (operational research) was begun in 1995. By 1997, control efforts were scaled up to cover all endemic districts, with well-organized annual MDAs using Praziquantel initiated in Kratie in 1996 and in Stung Treng in 1997. The baseline endemicity level, before the control measures were instituted, was over 70% among the school aged children population and 49% in the general population.

Since the institution of the MDA with coverage levels consistently over 80% every year, the prevalence of SCH had been progressively reduced to less than 1% of cases per year by 2006. However, the ongoing prospective study conducted by CNM in collaboration with the Dokkyo Medical University of Japan, that uses both ELISA and stool examination techniques indicated that by 2008, re-infections were occurring at a rate of 30%. Intensity of infection, however, has remained very low.

Additional mapping of Schistosomiasis was funded by END in Asia in 2013 to assess whether the disease was being transmitted within the adjacent provinces of Kampong Cham and Ratranakiri which share geographic similarities with the two endemic provinces, but the results proved conclusively that SCH was not evident in these areas.

Table 5: SCH MDA coverage in Cambodia 2005 – 2015

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Population at Risk	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Coverage	86.2%	82.8%	87.0%	90.4%	92.6%	94.3%	93.7%	92.4%	97.2%	88%	88.1%

Severe clinical cases of schistosomiasis, which were common in the past, have not been reported over the last decade despite increased surveillance. Parasitology surveys continue to indicate decreasing trends with regular multiple rounds of treatment. The role of animal hosts in the maintenance of transmission, even if complete clearance of human infection is achieved, remains unknown.

Regular annual MDAs continue to be implemented within both endemic provinces. The quality of these have been strengthened with assistance from END in Asia since 2013 to organize local stakeholder meetings and MDA management workshops prior to the implementation of the MDAs and increase supervision by CNM during the MDA.

Routine monitoring, with assistance from END in Asia since 2013, has been carried out annually in sentinel and spot check sites, with 1,500 stool samples per province examined using the Kato-Katz method every year. Prevalence has been dramatically reduced from 70% in 1995 to less than 3.4% in 2012 in both endemic provinces.

Table 6: SCH Monitoring in Cambodia 2005 – 2015

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
# of Stool Exams	2075	**2330**	2171	1060	1500	1200	2287	2461	2375	1200	713
Schistosoma makongi	7.6%	0.0%	2.8%	8.9%	4.6%	6.2%	3.6%	3.4%	2.3%	0.6%	0.4%

CNM hopes to declare that SCH is no longer a public health problem in Cambodia in 2016, if they are able to maintain the current MDA coverage rates, establish an appropriate surveillance system that would continue beyond elimination, and to adequately control the various relevant vectors. They fully expect, though, that they might be required to continue treatment of the entire at-risk population, perhaps indefinitely, until there is sufficient research on appropriate methods to control the various vectors, as well as greatly improved water and sanitation throughout the endemic areas.

Soil Transmitted Helminthes

STH infection with *Ascaris lumbricoides*, *Trichuris trichiura* and hookworms is widespread throughout Cambodia. Prior to the introduction of mass drug administration (MDA) in 2000, STH prevalence rates ranged between 20-83%, with 15 of the 24 provinces consistently showing rates over 70%. Notably, hookworm infection rates were over 20% in the general population in all the high endemic provinces, and in some provinces (eg., Stung Treng and Kratie) topped 70%. Mixed infections were also very common. All 24 provinces in the country are endemic for STH. As recommended by WHO, CNM together with the Ministry of Education, Youth and Sports (MOES), has instituted

comprehensive STH control efforts across the country, with a major focus on primary school-aged children, with activities for pre-school children and women of child bearing age as well.

Primary School Children: School deworming was progressively scaled up in 2000 and in 2004 achieved the WHO's 2010 target of regular treatment of >75% of school-aged children at risk. The program targets the entire primary school aged children (SAC) of the country (aged 6 to 11 years) using schools as drug distribution points for enrolled and health center for non-enrolled children. Since the majority of geographic areas in the country require two rounds of mass treatments per year, based on WHO recommendations, the MOH has chosen to deworm the entire school-aged population twice a year in order to simplify logistics and program management. All required drugs are donated by Johnson and Johnson though the international drug donation program now coordinated by WHO. The target population is now over 2.6 million children, of which 93% are currently enrolled in school. Coverage rates between 2005 and 2014 may be seen in Table 2. Since 2005, between 90.0% and 97.9% of all school aged children throughout the country were treated during MDAs which continue to be organized every January and June.

Table 7: School deworming coverage in Cambodia 2005 – 2015

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
School Aged Children	2,880,000	2,884,000	2,886,000	2,899,000	2,811,671	2,640,000	2,628,381	2,628,381	2,434,586	2,433,881
Coverage	95.3%	97.9%	92.4%	93.8%	90%	95.8%	90.47%	95.3%	93.0%	92.6%

The impact of the on-going MDAs are monitored by testing stool samples from 50 to 60 children from between 10 to 20 randomly selected schools each year, depending on the available funding. Results continue to show a range of infection rates, between 3.9% to 32.6%, with the vast majority of infections of low or medium intensity (Table below).

Table 8: Monitoring Impact of MDAs in SAC

Year	2005	2006	2007	2008	2009	2010	2011	2012
Prevalence of any STH (range)	1%-27.4%	0%-39.8%	1%-38.4%	9.0%-21%	5%-30%	1%-31.1%	0.8%-38.7%	3.9% - 32.6%
Proportion of heavy intensity infection	1%	0%	0%	0%	0%	0%	0%	1%

END in Asia has assisted CNM together with the MOES to implement several activities that have been critical to maintaining the high coverage rates within the school-based MDAs for school aged children, including strengthening awareness and building capacity of local implementers, confirming results and tracking impact on prevalence. These have included:

- STH Coverage and KAP Surveys. These surveys were implemented in 2012 and 2014, in line with WHO guidelines, in order to track implementation, verify reported coverage numbers, ensure compliance and improve the quality of management of the MDAs.
- National STH Surveillance Surveys. As the results of the STH monitoring have been inconsistent and inconclusive, with wide variations within geographic areas and over time, CNM organized a national surveillance survey in 2013 and 2014 with the assistance of END in Asia and based on WHO guidelines and specific recommendation. These surveys provided CNM with the evidence it needed to measure the impact of the MDA program and determine if it would be appropriate to begin to reduce the frequency of MDAs in certain areas.
- Supervision of MDAs in the field. As the program has been implemented continuously for over a decade, fatigue has set in. Staffing changes throughout the school system, as well as the local health care system have also contributed to an increasing lack of awareness of program guidelines and insufficient quality control in the field. Without regular supervision, the quality of implementation across the entire school system will begin to decline over time. CNM and MOES have made excellent use of the resources provided by END in Asia to increase the frequency and quality of supervision of MDAs across the country.
- Engagement with the MOES at all level across the country. Beginning in early 2013, END in Asia has supported the implementation of a STH Training Course for teachers and school administrators focusing of the management of the STH MDAs which by late 2014 had been implemented across all provinces in the country. The Ministry of Education has also implement a series of provincial level meetings across the country with the assistance of END in Asia to update, inform and raise commitment among senior ministry officials at all levels so that they can strengthen their support for the program. Their engagement has been critical since they control the budget allocations that actually fund the distribution of the STH treatments through the school system.

General Support

END in Asia has also assisted CNM to organize a series of important management meetings, including annual National Task Force meetings, annual National NTD Conferences, and National NTD Stakeholder Meetings in 2013 and 2014. These have contributed greatly to maintaining the high level of coordination and active collaboration among all of the government agencies and other institutional partners involved in the implementation of NTD activities across the country.

During the final year of the END in Asia program, CNM was also able to organize a comprehensive course on NTD Program Management for provincial and district level health professionals which was rolled out across the country. This has been part of the critical effort to upgrade the program management capacity of provincial and district level officials in all NTD program areas across the country. These two-day courses focused on introducing the newly revised NTD strategies and guidelines and facilitating more active local support and involvement in managing NTD activities in the field. Over 3,500 local health officials have been trained, and are now positioned to actively manage critical NTD control and elimination efforts in each of their respective areas.

Comprehensive Summary

National NTD Response in Laos

Laos Summary

Under USAID Cooperative Agreement No. AID-OAA-A-10-00051, FHI 360's End Neglected Tropical Diseases in Asia Project (END in Asia) has provided support to the **Ministry of Health (MOH)** in Laos, including the **Directorate for Communicable Disease Control (DCDC),** the **Center for Malariology, Parasitology, and Entomology (CMPE),** the **Center of Ophthalmology (CO),** as well as the **Ministry of Education and Sport (MOES)** to strengthen and expand their national NTD control efforts.

Beginning in October 2012, END in Asia has provided both financial and technical assistance to the MOH and MOES to fill in crucial gaps within the national control and elimination programs for soil transmitted helminthes, schistosomiasis, lymphatic filariasis and trachoma, including supervision of MDAs, organizational meetings and refresher trainings for program implementers at all levels, mapping of suspected areas, as well as a range of surveys and assessments to better track, understand and document the process of control and elimination. Major efforts have focused on:

- expanding the STH MDAs to include children of school age between 12 and 14 years of age within the secondary school network in order to be in full compliance with WHO recommendations as well as maintain high coverage and strong management of the STH MDAs within the primary school system;
- overcoming the strong resistance to SCH MDAs by the local community following recent deaths, and reestablish regular MDAs with the strong involvement and support of the local community and local health services;
- reinvigorating the LF MDAs following years of limited funding, complacency and fatigue, and increase MDA coverage to over 65% on a sustainable basis including house to house distribution of treatment;
- collecting reliable data on the status of Trachoma in the country to allow the National NTD Program to determine an appropriate response to what may be a critical N

Lymphatic Filariasis

Rapid assessment: With the launching of the GPELF in the year 2000, the MOH initiated a country-wide rapid assessment survey to quickly identify the endemic foci of LF. The survey was designed to assess the distribution of chronic disease, primarily focusing on the presence of people with the condition at the community level. The data suggested that all the provinces were free from lymphedema cases and only a small number of people in a few communities were affected with hydrocele-like manifestations. Overall, the survey results indicated that LF disease prevalence and burden was very low.

Mf surveys: To supplement the questionnaire survey and prepare a LF map of Laos, CMPE carried out extensive Mf surveys in 14 provinces between 2002 and 2007. In each province, one to five districts, and, in each district, one to 11 villages were surveyed. The Mf survey results suggested that all the provinces except the southern province of Attapua were free from LF. In Attapua, only one district (Puonvong) was found to be positive for Mf carriers.

In order to precisely estimate the prevalence of LF infection in Attapua province, antigenaemia (Ag) surveys were carried out in 2009 using immunochromatograhic card tests (ICTs). The surveys, carried out in all the 5 districts of the province, revealed that all the districts were endemic for LF. The Ag rate in these districts ranged from 1.9% to 27.4% (Table below).

Table 1: Results of Antigenaemia Surveys, using ICTs, in Attapua Province, 2009

Province	District	Year	No. of districts assessed	No. of people tested	No. found with Ag	% with Ag
Attapua	Sanxay	2009	1	157	3	1.9%
Attapua	Svakhixay	2009	1	112	5	4.5%
Attapua	Sanamxay	2009	1	51	14	27.4%
Attapua	Phouvong	2009	1	200	35	17.6%
Attapua	Xaysetha	2009	1	252	28	11.1

Source: CMPE, Vientiane, Laos

National Program to Eliminate LF: Following the mapping of the country and identification of the LF infection, an MDA program was launched to eliminate LF as a public-health problem. The program was implemented according to the guidelines provided by the WHO. The first round of MDA was implemented in the year 2008 in the district of Phouvong, where LF endemicity was detected first in 2007. Implementation of Ag surveys and identification of four more endemic districts in the province in 2009 led to the extension of the MDA programme to cover all five districts in Attapua in 2010. In 2011, the MDA was cancelled due to a lack of funding to procure the necessary drugs and cover operational costs. In 2012, the program was re-started, and since then MDAs have been implemented within all five districts in Attapua, which have been combined into one Implementation Unit. The target population for MDA is 132,684. Under the MDA program, DEC+ALB are administered annually to the target population and are provided through WHO.

The operational costs of the program were borne by the ADB in 2008 and 2009 and by WHO in 2010. MDA was not implemented in 2011 due to paucity of funds. The ADB agreed to support the program again in 2012, but funding levels continued to decrease significantly in 2013. During 2014 and 2015, all of the operational costs for the MDA were provided by END in Asia.

A LF MDA Coverage Survey was implemented by the National Institute of Public Health throughout the endemic districts in Attapua Province during June and July 2013 with support from END in Asia. Using a standard WHO recommended methodology, the NIOPH provided a third party, impartial assessment of the overall MDA program for LF which was then used to identify weaknesses and suggest areas for improvement. The results became the basis for extensive discussion and consultations, which in turn results in dramatic improvements in program coverage and compliance.

In order to increase both the coverage rates and quality of the management of the LF MDAs, END in Asia also provided support to DCDC and CMPE to organize Refresher Workshops on MDA Management for provincial and district health staff prior to the implementation of MDAs beginning in 2013. END in Asia also provided funding for more intensive promotion of the MDAs including launch events, posters and local media coverage. The frequency of monitoring and supervision in the field was also dramatically increased with support by END in Asia, which included personal involvement by the Minister of Health as well as the Cabinet Secretary for Health. These supervisions visit were critical in replacing the previous system of consigning the drugs to a village head with the expectation that he will see that they are distributed to households, with the DOTs methodology. The treatment coverage reported by the program subsequently increased from 65.1% in 2012 to 88.3% in 2015.

To further track the quality of implementation of the MDAs and measure its impact, END in Asia supported a series of LF Sentinel Site and Spot Check Surveys in Attapua province in October 2014. Blood samples from 300 students in each of the two established sentinel sites and in two randomly

selected spot check sites were tested using ICT rapid tests. Four ICT positive cases were reported in each of two sites, and were confirmed by Mf testing. This shows that LF is still being transmitted in the area and that further MDAs are still required.

Table 2: Details of LF MDA, Attapua Province, Laos, 2008-2015

Population in 2013	Number and % of targeted people treated during different years												
	2008	2009	2010		2011	2012		2013		2014		2015	
	No.	No.	No.	%	No MDA	No.	%	No.	%	No.	%	No.	%
139,322	10,751	10,980	82,745	62.3%		86,402	65.1%	93,482	68.3%	121,019	99.5%	137,089	88.3%

Source: CMPE, Vientiane, Laos

Mapping adjacent areas: As recommended by WHO and a USAID funded consultant, in 2013 END in Asia provided support for the implementation of mapping surveys for LF in the two adjacent provinces to Attapua province, that is, Xekong province with five districts and Champasak province with ten districts, in order to measure the prevalence of the disease in each area, assess whether transmission was extending into these areas, and determine if MDAs would be required. A sampling methodology was determined following standard WHO guidelines. Approximately 100 people over 15 years of age in one randomly selected village in each district were tested using the ICT rapid test. Six positive cases were found in one village in the border area of Xekong Province, adjacent to Salavan Province. Because of this proximity, the WHO recommended that additional mapping should be done in two districts in Salavan Province nearest to the village in Xekong where the positive cases were found in order to determine if transmission is occurring in these areas as well. No additional positive cases were found. Based on these findings, both WHO and the USAID funded LF expert recommended that two annual rounds of MDA be administered in the six villages in Xekong Province adjacent to the village of the six positive cases in order to ensure that the transmission of the disease is controlled, which were implemented with funding from END in Asia in 2014 and 2015.

Roadmap for elimination of LF*:* CMPE will implement annual MDA in all endemic districts of Attapua province through 2016 so as to complete at least five consecutive rounds of MDA with sufficiently high coverage in each area to achieve WHO recommended criteria. The implementation of a Stop-MDA survey is proposed in 2016 and post-MDA surveys in 2018 and 2020. A timeline of these proposed activities is given in Table below.

Table 3: Planned Timeline of LF Elimination Activities in Laos, 2012-2020

Activity	2012	2013	2014	2015	2016	2017	2018	2019	2020
MDA in the endemic IUs									
Sentinel surveys									
Stop MDA survey 1 (one EU)									
TAS 1									
TAS 2									
Preparation of elimination dossier									
Verification of elimination achievement									

Source: Control of Neglected Tropical Diseases in the Lao PDR, 2011-2015, Ministry of Health, Vientiane

Trachoma

Between 2000 and 2013, the National Center of Ophthalmology had carried out a variety of rapid assessments and other eye health related surveys which provided a suspicion that trachoma might be a public health concern in Laos, but no hard evidence was available.

The National Center of Ophthalmology therefore requested help from END in Asia to design and organize a National Trachoma Assessment. Following extensive discussions with WHO and experts from the Global Trachoma Mapping Project, a methodology and official protocol for the National Assessment of Trachoma in Laos was developed. Trachoma Eye Graders from the Center of Ophthalmology were trained in Ethiopia and a special training for the trachoma survey teams (including data recorders) was organized in Laos in November 2013 with facilitation from two international trachoma experts provided through the ENVISION TAF mechanism. Immediately following the training, implementation of the actual survey commenced. A total of 16 evaluation units, which basically cover the entire country, were surveyed by August 2014. Preliminary results indicate that trachoma is definitely not a public health problem in Laos, with prevalence well below the critical threshold determined by WHO.

The survey identified several possible trachoma "hotspots", though. Based on discussions with a bevy of international trachoma experts at the GET 2020 meeting in Ethiopia in April 2014, it was strongly recommended that a more intensive investigation of these "hotspots" be done. WHO Geneva and the international trachoma experts collaborated on the development of an appropriate methodology to be used for these investigations. Following additional training in the collection of eye swabs and dry blood spots for laboratory analysis, the actual intensive investigations were implemented in the three potential hotspots in late 2014. The biological samples were then sent to the London School of Hygiene and Tropical Medicine for analysis. Following analysis by a team of international trachoma experts, including WHO Geneva, it was concluded that Trachoma is not a public health concern in Laos and that no further interventions are required or justified. A final report of the assessment was been completed and is currently waiting official approval by the MOH before submission to WHO.

Schistosomiasis

Within Laos, SCH caused by *S. mekongi* is endemic in only two districts, Khong and Mounlapamok, of Champasak province - in the southernmost part of the country where there is an ideal environment for propagation of the snail host in the Mekong River. Almost 100% of families in these districts routinely come into contact with these snails, and poor hygiene and sanitation result in easy transmission of the infection. Approximately 110,000 people are at risk of infection. The overall prevalence of SCH was around 42.2% in the years 1988-90, and the rate of liver enlargement was 23.3%. Recognizing the severe morbidity caused by the disease and its impact on the local community, the MOH launched a control program in the year 1989 and implemented five rounds of MDA using Praziquantel (PZQ), between 1989 and 1995, targeting the entire population aged greater than 4 years. An additional MDA was implemented in a wider area in 1998. Treatment coverage for the MDAs implemented during 1989-1998 ranged from 34% to 65% of the total population and 46% to 88% of the target population. The MDA program reduced the prevalence rate to very low levels - 2.1% in Khong district and 0.4% in Mounlapamok district. With these positive results, the Ministry decided to stop the MDA for SCH, although the sustainability of reduced SCH levels remained

doubtful. As feared, the infection resurged – a prevalence of 10.8% to 50.0% in five villages was observed in 2003 and 2004 and 1.6% to 68.8% in thirteen randomly selected villages in 2006-07.

Second MDA campaign (2007 to present): As a result of this resurgence, the SCH MDA campaign resumed in 2007. More than 100,000 people (ages 5-60) were targeted every year through mass community distribution organized by the local community health centers, with treatment coverage ranging from 53.9% of 66.8% of the total population. The details of the MDA campaign are summarized in the Table 5. The MOH has plans to continue the MDA campaign indefinitely, until such time as clearer guidelines on elimination are available. The annual MDAs are supported by local health education campaigns. Periodical monitoring and evaluation of the campaign is carried out to assess the impact of MDA and modify the control strategy. Due to serious concerns about the quality of the donated drugs available to the program, the SCH MDA in 2012 was cancelled. The MDAs resumed in late 2013 after a safe supply of quality drugs was donated by WHO.

Beginning in 2013, END in Asia provided extensive support to DCDC and CMPE to reinvigorate the SCH program and reinstate confidence in the MDA at the local level through the implementation of district level stakeholder meetings, improved monitoring and supervision in the field, and more intensive promotion of the MDA campaigns within the local communities.

SCH Sentinel Site Surveys were organized in four villages within the two endemic districts in Champasak province in August, 2014, with assistance from END in Asia. A sample of approximately 175 people from each of four villages in each district were surveyed using the Kato Katz examination. Results showed prevalence rates for each of the two endemic districts at 57.6% and 71.3%, indicating a real problem with reinfection and re-enforcing the imperative to continue mass treatment indefinitely.

Table 4: Details of Ongoing MDA Campaign in Champasak Province, Laos, 2007-2014

Detail	2007	2008	2009	2010	2011	2012	2013	2014
Total population in the 2 districts	103,540	106,723	111,247	108,273	120,403	NO MDA	116,367	129,410
Total eligible group	88,500	71,117	79,649	72,228	84,954		102,163	76,676
No. of treated eligible person	68,500	57,775	74,398	58,432	76,852		65,814	64,398
% coverage per targeted people	77%	81%	93%	81%	90%		64%	84%
% coverage per total population	66%	54%	67%	54%	64%		57%	50%

Source: CIMPE, Vientiane, Lao PDR

Moving from control to elimination: Previous research has addressed the issue of sustaining control and/or moving towards elimination in Laos, and highlighted the difficulties associated with sanitation improvement; the importance of consolidation of control achievements; and the need for evolving control strategies for low-endemic situations. During 2014, the MOH together with WHO and END in Asia developed a National Schistosomiasis Strategy to guide efforts to move from control to elimination. The strategy continues to focus on MDA and the improvement of water, sanitation and hygiene, and also includes efforts to control the various vectors responsible for transmitting the disease in Laos. Elimination as a public health problem is planned for 2016, but regular MDAs and routine surveillance will continue to be required to ensure that the disease does not re-emerge.

Soil Transmitted Helminthes

Baseline prevalence: An extensive nationwide study by the Korean Association of Health Promotion conducted from May 2000 to June 2002 tested 29,846 primary school children, drawn from all 17 provinces, for STH infection using cellophane thick smear technique. The cumulative egg positive rate for STH was 61.9%. By species, the prevalence rate for *A. lumbricoides* was 34.9%, hookworm 19.1% and *T. trichiura* 25.8%. The northern mountain provinces such as Phongsaly and Huaphan showed as high as 70% STH prevalence. The nation-wide survey results, highlighting the high prevalence of STH infections throughout the country and the associated morbidity risks, provided strong evidence, support and advocacy for the national STH control program. The baseline prevalence data clearly suggested that all provinces in Laos required mass drug administration (MDA) for STH, in accordance with WHO guidelines.

Pilot control project: In the year 2001, a pilot STH MDA activity was implemented in five provinces, to test the feasibility and understand the logistics of implementing large-scale MDA using the primary school system. A total of 41,000 school children were targeted with two MDAs per year. The MDAs were implemented at six-month intervals and a total of six rounds were implemented over a period of three years. Post-MDA, the STH prevalence was 43% and >90% of the targeted children had only infections of low intensity. The pilot project demonstrated that large-scale school-based MDAs were feasible.

MDA: By 2010, approximately 0.92 million school going children, ages 6-11 years, were being targeted annually with MDA. In 2007, children in all provinces were given two treatments. Since 2008, MDA has been implemented once a year in eight provinces and twice a year in the other nine provinces, in line with WHO guidelines. Every year, MDA is implemented in the months of April and October. Directly-observed treatment is administered in each school under the supervision of the teachers. Close supervision is also provided by the teachers post-treatment to deal with any possible side effects. END in Asia has provided funding to increase the number and quality of supervision visits by senior staff from the MOES and CMPE each year since 2013.

Table 5: Details of School-based STH MDA Implemented in Lao PDR, 2005-2014

Province	2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		Total
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
VTE Capital					√	√	√		√		√		√		√		X		X		9
Phongsaly		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	19
Luangnumtha		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	19
Oudomxay		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	19
Bokeo			√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	18
Luangprabang			√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	18
Xayabury				√	√	√	√		√		√		√		√		X		X		10
Xiengkhoang			√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	18
Hoaphan			√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	18

VTE province		√	√	√	√	√	√		√		√		√		√		X		X		12
Bilokhamsay					√	√	√		√		√		√		√		X		X		9
Khammuane				√	√	√	√		√		√		√		√		X		X		10
Savankhet				√	√	√	√		√		√		√		√		X		X		10
Champasak					√	√	√		√		√		√		√		X		X		9
Salavanh					√	√	√		√		√		√		√		X		X		9
Sekong				√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	X	17
Attapeu					√	√	√		√		√		√		√		X		X		9
Total		**4**	**8**	**12**	**17**	**17**	**17**	**8**	**17**	**8**	**17**	**8**	**17**	**8**	**17**	**8**	**17**	**8**	**17**	**8**	**233**

√: MDA Implemented. Note: 1 indicates the 1st MDA campaign and 2 the 2nd MDA campaign in the year

Source: CIMPE, Vientiane, Lao PDR

Non-enrolled children: Efforts are made to treat non-enrolled children as well. (Currently school enrollment is estimated at over 90%.) These non-enrolled children and/or their parents are requested to be come to the local school on the day of the drug distribution and are given treatment. Those who do not turn up at the school are given treatment at their houses by community volunteers or a local teacher. The village committees have details on school attendance and help in sending the non-enrolled children to schools for treatment or organizing distribution of drugs to the children in the community.

Information, Education and Communication (IEC) activities: IEC materials for children were developed by WHO in association with UNICEF in 2005 and are updated as and when required. These IEC materials have included three types of posters, one comic book and two types of games. One set of materials was provided to each class. Overall, 20,000 sets have been distributed to schools across the country. The WHO has also produced 3,000 Blue Boxes for schools, which include information on hand washing, use of latrines, STH, malaria, and dengue fever. Only a relatively small proportion of the 8,900 schools have received these materials, though the government has plans to procure more boxes following improvements and distribute them to schools in 67 districts identified as very poor, under the 'Schools of Quality' program. END in Asia has contributed to the printing and distribution costs of these materials in order to increase coverage to all school is priority areas where STH infections are the highest.

Serious adverse events: In the past side effects had been minimal and easily manageable. But during the previous year, with increased supervision and improved monitoring, a number of minor side effects were discovered, some causing great local concern. On investigation in several locations where side effects occurred, CMPE and WHO found that there were no serious adverse effects, but identified a real need for refresher training on proper management of side effects both within the school system as well as the local health services.

Training: Primary school teachers around the country were trained in 2005 on the eve of launching the national program. Subsequently, there have been no additional training activities. Program personnel feel that a refresher training course would be very useful to sustain the momentum of the program, especially due to the large turnover in both administrative and teaching staff in many

schools. END in Asia and WHO began to address this problem in mid-2014 with the implementation of a national level TOT and provincial and district level training for education officials and primary school teachers in seven provinces. In 2015, END in Asia provided funding to expand this critical training to five additional provinces.

Table 6: Summary of STH MDA Treatment Coverage (%) in SAC, 2005-2013

Province	2005		2006		2007		2008		2009		2010		2011		2012		2013	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
VTE Capital					96	100	99		100		√		97		√		94	
Phongsaly		65	82	100	93	84	99	99	100	97	√	√	100	√	√	√	79	90
Luangnumtha		100	98	100	94	85	99	99	99	94	√	√	97	√	√	√	94	96
Oudomxay		98	100	98	90	84	92	92	99	44	√	√	100	√	√	√	73	97
Bokeo			92	100	95	91	100	100	99	99	√	√	100	√	√	√	88	97
Luangprabang			90	99	130	86	100	100	99	100	√	√	100	√	√	√	99	78
Xayabury					102	105	105		99		√		100		√		63	
Xiengkhoang			96	99	105	94	99	99	98	99	√	√	100	√	√	√	65	99
Hoaphan			98	98	75	95	93	93	100	100	√	√	100	√	√	√	89	90
VTE province		100		100	98	100	100		100		√		100		√		98	
Bilokhamsay					108	109	96		96		√		99		√		87	
Khammuane					88	90	87		100		√		100		√		84	
Savankhet				100		94	98		99		√		100		√		60	
Champasak						88	100		100		√		100		√		90	
Salavanh				98		85	91		96		√		100		√		89	
Sekong				97	91	84	96	96	100	98	√	√	99	√	√	√	99	100
Attapeu				99		84	95		97		√		59		√		66	
Average		**94**	**94**	**99**	**97**	**93**	**97**	**97**	**99**	**98**			**97**				**79**	**91**

1=1st MDA campaign, 2=2nd MDA campaign

Impact assessment: The impact of the program has been routinely assessed. Four schools are randomly selected have been determined in each province and parasitological surveys have been carried out regularly among children of schools age (6 to 11 years old) since 2006. END in Asia has provided funding for these surveys since 2013. The results of the assessments carried out during 2010-2014 in different provinces are summarized in Table 4, with baseline data from 2002 included for comparison purposes.

Table 7: Summary of Results of STH Surveys in Laos, 2010-2014

Year	Targeted area	No. people examined	No. Positive (%)	Prevalence (%)		
				Al	Tt	Hw
2002	79 districts	29825	18442 (62%)	10421 (35)	7,707 (26)	5,692 (19)
2010	Kong district in CPS province	260	190 (73%)	6 (3%)	7 (4%)	50 (26%)
2010	Moun district in CPS province	161	125 (78%)	1 (1%)	4 (3%)	20 (16%)
2010	Sanasampoun district in CPS province	211	109 (52%)	2 (2%)	1 (1%)	24 (22%)
2012	2 Districts in PSL province	686	448 (65%)	195 (44%)	84 (19%)	107 (24%)
2012	2 Districts in HP province	780	519 (67%)	254 (49%)	280 (54%)	119 (23%)
2012	2 Districts in BK province	332	81 (24%)	43 (53%)	15 (19%)	31 (38%)
2012	2 Districts in LNT province	439	117 (27%)	79 (68%)	36 (31%)	25 (21%)
2012	2 Districts in Oux province	636	451 (71%)	11 (2%)	10 (2%)	376 (83%)
2012	3 Districts in XK province	1290	710 (55%)	181 (25%)	46 (6%)	407 (57%)
2012	2 Districts in BLKX province	611	270 (44%)	45 (17%)	5 (2%)	114 (42%)
2012	2 Districts in SLV province	625	420 (67%)	35 (8%)	1 (0.2%)	84 (20%)
2012	3 Districts in CPS province	1,092	498 (46%)	9 (2%)	7 (1%)	172 (40%)
2012	2 Districts in SK province	706	220 (31%)	104 (47%)	31 (14%)	85 (39%)
2012	2 Districts in Att province	449	255 (57%)	-	7 (3%)	85 (33%)
2014	4 Provinces: PSL, XK, VP, LPB	314	119 (38%)	16 (5.1%)	45 (14.3%)	103 (32.8%)

Source: CIMPE, Vientiane, Lao PDR

Junior secondary school children: In light of the WHO recommendation to deworm all school age children between the ages of 5 and 14 years, the MOES and MOH have been working to extend the STH MDA program into junior secondary schools across the country in order to include 12-14 year old children with the assistance of END in Asia. The estimated number of the children in the 12 to 14 year old age group is 0.4 million.

Prior to the expansion of the program, END in Asia funded the Implementation of STH Base-line Prevalence Surveys among children between the ages of 12 and 14 years in twelve representative districts. Results showed that the prevalence of STH among 10 year olds which were covered in the existing school based program was 2.3%, while 13 and 14 year olds who have not received recent treatment were 23.0% and 20.6% respectively, reinforcing the need to continue mass treatment through at least 14 years of age.

As part of the process of expanding the MDA program to include children between the ages of 12 and 14 years old, orientation workshops funded by END in Asia were organized in 2012/13 in each of the 17 provinces to introduce the MDA program to the district level stakeholders who were be responsible for establishing the program throughout the network of junior secondary schools in their respective districts. Selected MOES officials from all 17 provinces and 145 districts were included in these two-day workshops, with a major focus on explaining the importance of the MDA, reviewing operational and management system as well as roles and responsibilities, and stimulating strong commitment. A second series of workshops was organized in each province targeting the principals and selected teachers from every school in the province to provide a thorough orientation to the de-worming activities including an explanation of the rationale, responsibilities, process and recording and reporting systems. Representatives from over 1,400 schools participated. Special materials were also printed for distribution during these workshops to assist the teachers to better inform

their students.

General Support

END in Asia has also provided support for annual National NTD Stakeholder Meetings which focus on reviewing results from program implementation during the previous year and finalizing plans for the next, and included discussions on approaches to increase collaboration and improve coordination. These Stakeholder Meetings are attended by over 150 participants the MOH, MOES, and other relevant government agencies as well as several donor organizations, and have had an extraordinary impact on improving program implementation. END in Asia has also funded a series of meetings at the national level during 2015 to develop a new National Strategy for the Control and Elimination of NTDs in Laos for the period 2016 to 2025 which will set the course for the future response to these devastating diseases.

END in Asia supported the implementation of a series of Refresher Training for Lab Technicians which commenced with two regional trainings for provincial technicians first in Savankhet and Luang Prabang in 2014 during which 47 participants received updated training in the Kato Katz and other lab techniques used to measure NTDs. These provincial lab technicians, together with senior laboratory staff from the national level, then trained two district level lab technicians from each district across the country. A total of 90 district level lab technicians were trained. These courses were facilitated by expert laboratory technicians from Japan provided through JICA, and have had a major impact on the quality of lab work across the country.

END In Asia also supported the MOH in the organization of a series of workshops to revise the National NTD Policy and Strategy between March and June 2015 with participation from DCDC, CMPE, the Center for Ophthalmology, MOES, WHO, END in Asia and all other stakeholders, as well as provincial health staff. The previous NTD Strategy was finalized in 2008 and was in drastic need of an update to reflect changes in WHO guidelines and developments within the various NTD programs in country. The document has been finalized and is being translated into English prior to submission to WHO for their technical review and concurrence.

Comprehensive Summary

National NTD Response in Papua New Guinea

PNG Summary

The National Department of Health (NDOH) is responsible for determining national health policy as well as providing oversight and supervision of all public health programs in Papua New Guinea (PNG), including a national response to Neglected Tropical Diseases (NTDs). The responsibility for direct oversight of NTDs lies within the Malaria and Vector Borne Diseases Unit within the Disease Control Program of the Division of Public Health. In general, the responsibility for actual implementation of all health programs lies within the individual provincial health authorities. This responsibility at the provincial level also includes program planning, budgeting and providing all required funding from local resources.

The NDOH has established a NTD Technical Working Group as the official body to help coordinate and advise on the national response to NTDs, which currently includes lymphatic filariasis, dengue fever, yaws, and rabies, with ongoing discussions of the need to reestablish a national school based program for STH. The NTD Technical Working Group meets regularly, approximately once a month and includes representative from all relevant units within the NDOH, WHO, other international NGOs, universities, several private sector companies, USAID, and FHI 360.

There is a wealth of international technical expertise and research related to NTDs within PNG. Both James Cook University and Case Western University have done extensive research on LF in PNG for several decades and bring a wide range of field experience and knowledge of the local situation in PNG. WHO also has a well-established working relationship with the NDOH.

Lymphatic Filariasis

One of the factors impeding development in PNG is a high disease burden, especially in remote populations, due to infection by NTDs. One of the most prevalent NTDs is lymphatic Filariasis (LF), or elephantiasis, which is endemic in at least 61 out of a total of 87 districts in PNG, with approximately 5.2 million people at risk.

In Papua New Guinea, LF is caused by the parasite *Wuchereria bancrofti* and is mainly transmitted among humans by the mosquitoes *Anopheles punctulatus*, *An. farauti*, and *An. koliensis*, the same vectors that transmit malaria. Infection with the parasite can cause chronic disabling diseases such as lymphoedema (swelling of the legs and arms), elephantiasis (thickened, disfigured skin), and hydrocele (swelling of the testes).

The goal of the Global Program to Eliminate LF is to interrupt transmission of LF and alleviate morbidity from the disease by 2020. WHO recommends implementing preventive chemotherapy, also known as mass drug administration (MDA), with diethylcarbamazine citrate (DEC) and Albendazole (ALB) to entire populations living in endemic areas, excluding those under two years of age, pregnant women, and the severely ill. The MDA should be given once a year for at least five years to break the cycle of transmission. Distribution is organized and monitored by implementation units, which in this case are districts.

Sites with very high prevalence have been found in Papua New Guinea, leading to groundbreaking research on the dynamics of transmission, the relationship between infection and morbidity, and the effect of preventive chemotherapy. However, there has been no comprehensive nationwide prevalence study of LF in Papua New Guinea. A summary of surveys for microfilariae in 46 sites in the New Guinea mainland and islands between 1912 and 1952 found prevalence varying from 0% to 71.4%, with a crude average of 26%. Based on limited survey data from the 1970s and 1980s, Michael and Bundy put Papua New Guinea in the 20 to 50% prevalence range using modeling and

prediction. Kazura and Bockarie summarized information available to 2003 by district and province, and stated that prevalence varied from 10% to 92% locally.

Endemicity data from sero-prevalence antigen surveys and research projects completed in the past 25 years were used to determine whether districts needed MDA. One literature search identified 324 separate survey sites between 1980 and 2011. The criterion for classifying a district as endemic (i.e. needing MDA) is an antigen prevalence of >=1%. Of those districts that had data, the highest prevalence was in coastal and lowland areas; 61 districts were classified as endemic (60 had antigen levels >=1% and one was not mapped but was surrounded by endemic districts). Twenty districts had antigen levels of <1%. Eight districts still need to implement surveys to determine endemicity. The total population targeted for MDA is at least 5.2 million people in 61 districts, which could increase when mapping is completed.

In the past, a limited number of individual MDAs have been implemented sporadically by researchers for specific studies, international extraction companies serving the areas surrounding their work area, or health staff travelling to communities to treat everyone they can reach in a set period of time, usually a week. Some MDAs were also implemented when they could be added to other activities such as distribution of bed nets; however, this has not resulted in any continuity of MDA in districts because nets are only distributed every few years. All these activities have been implemented with the full knowledge of and often in collaboration with the NDOH, but there had been no sustained, well-organized district-level MDAs for LF in any area in the country.

In 2012, the NDOH together with WHO developed a detailed "PNG Concept Note: No More Worms, 2013 to 2015" based on an earlier national strategic plan to eliminate LF covering the years 2004 to 2020. Despite these well-developed concepts, progress towards organizing a comprehensive MDA program for LF was never seriously attempted. Excessive enthusiasm by both WHO and the NDOH, despite the lack of a realistic operational plan, resulted in several major donation of drugs to PNG that was never able to be used, having to be destroyed because they had expired and some lost within the national drug logistic system. Despite the establishment of an official Technical Working Group for NTD under the auspices of the NDOH in 2012, the availability of additional drug donations through WHO, and the offer of assistance from USAID beginning in 2012, little actual progress was made in organizing a pilot LF MDA until early 2014.

Pilot Lymphatic Filariasis (LF) MDA Program: Following the arrival of USAID assistance, the NDOH in consultation with WHO and END in Asia, selected New Ireland Province to be the location of a pilot MDA for LF. New Ireland province consists of two districts (Kavieng and Namatanai) with a total population of 174,207. This province was selected for the pilot for a variety of reasons, including high prevalence of LF, a clearly contained geographic areas, mid-level of overall development, adequate health infrastructure, and political support from the provincial government. Results from a variety of previous surveys concerning LF in New Ireland may be found in the Table below.

Table 1: Results of Previous LF Surveys in New Ireland Province

District	Locality	Year	% Pos Mf	N tested Mf	% Pos ICT	N tested ICT
Kavieng District	Lovangai	2006	0.16	104		
	Metvoe	2006	0.19	123		
	Ungat	2006	0.12	65		
	Vaikeb	2006	0.13	88		

	Metvoe	2011			0.18	247
	Ungat	2011			0.24	96
	Vaikeb	2011			0.08	168
Namatanai District	Amfar	2006	0.02	182		
	Lif	2006	0.21	34		
	Malesak-Put	2006	0.42	94		
	Tefa	2006	0.24	81		
	Amfar	2011			0	98
	Lif	2011			0.18	17
	Malesak-Put	2011			0.25	125
	Tefa	2011			0.35	102

A Baseline Survey for LF in New Ireland had been completed by the NDOH in 2011 in preparations for the start-up of a LF MDA intervention which never materialized. Following consultation with WHO and NTD experts from James Cook University, it was decided that the situation in New Ireland has not changed significantly since the survey was completed and that the results are still valid for use as a baseline for this new initiative. One sentinel site was selected in each of the two districts in New Ireland, and infection rates using the ICT were found to be 15% in Lavongai, Kavieng District and 17% in Tanga Islands, Namatanai District.

The provincial and district health services recruited a network of village volunteers (one per village) who, in turn, were responsible for distributing drugs in communities throughout New Ireland under the supervision of trained supervisors selected from each local health center. The first round of MDA was successfully completed in May 2014, with reported coverage of 78%. (Detailed coverage results may be found in the Table below.) END in Asia provided a variety of support for the pilot including the provision of active technical assistance throughout the planning process; organization and funding of a provincial planning workshop; training of trainers, supervisors and volunteers across the province of New Ireland (70 supervisors and over 600 local community volunteers): printing of a promotional leaflet, and shipping the donated drugs from Port Moresby to Kavieng, New Ireland.

Table 2: Results of LF MDA in New Ireland in May 2014

	Population	Target Population	Total Treated	MDA Coverage	Epidemiology Coverage	Geo Coverage
Kavieng District	77,006	69,336	53,913	78%	70%	100%
Namatanai District	97,201	86,678	67,821	79%	71%	100%
Total	174,207	156,012	121,734	78%	70%	100%

Operational costs for the supervisors and volunteers (including incentives and transportation costs) were provided by the provincial government, with some financial assistance from WHO and the NDOH, during this first round of MDAs.

A Post MDA Workshop was also organized in Kavieng in early August 2014 with funding from END in Asia that included representative from the NDOH, the provincial health authority, district and local level administrators, and selected supervisors and volunteer. This workshop focused on finalizing the results of the MDA, identifying strengths and weaknesses, and formulating plans for the next round of MDAs in New Ireland. Representatives from Sandaun Province also attended the workshop at their own expense to learn more about the MDA process and assess the possibility of implementing LF MDAs in their province next year.

END in Asia also assisted the NDOH to organize an MDA Review and Data Management Workshop in November 2014 to review the implementation of the first round of MDA for LF in New Ireland province, with a special focus on the data collection system that was used. The workshop was held outside Port Moresby with over 30 participants from the NDOH, WHO, the provincial health authority of New Ireland, James Cook University and Case Western University as well as END in Asia. The groups decided to simplify the system and use the standard reporting forms and data collection mechanism recommended by WHO in all future MDAs.

End in Asia has also collaborated closely with The NDOH to provide technical assistance during early 2015 to Gulf province and to Sundaun province. During these visits a series of discussions with the provincial health authorities and other senior provincial officials were held concerning the possibility of expanding the LF MDA program into these provinces in the near future. Results were very promising, though the critical funding for these provincial programs from within the provincial health budgets may not be available until early in 2016. The provincial health authority in Sundaun has already appointment an LF program coordinator and established a small working group to help plan the first MDA once their local funding is available.

Second Round of MDA in New Ireland: Despite the promise of annual funding support for LF MDAs in New Ireland from within the provincial recurrent budget by the provincial governor and senior health authorities, no allocations were realized in the 2015 provincial budget. This resulted in the NDOH having to reallocate national funds to support the second round of MDA in New Ireland, which is planned for implementation in mid 2015.

END in Asia has contributed to this effort by funding the refresher training of 72 provincial and district MDA managers as well as MDA supervisors from the local level governments across New Ireland Province. This training was organized in Kavieng and Namantani districts in late May 2015 and was the final support END in Asia was able to provide to PNG before the close out of the project.

Comprehensive Summary

National NTD Response in the Philippines

Philippines Summary

The Infectious Disease Office within the National Center for Disease Prevention and Control, Department of Health (DOH) is responsible for the coordination of national efforts to control and elimination major NTDs in the Philippines. Individual disease program, including the National Filariasis Elimination Program, the National Schistosomiasis Control Program, and the National Soil Transmitted Helminthes Control Program are managed by a dedicated program manager, under the direction of the head of the Infection Disease Office. Actual implementation including operational planning and funding for most NTD field activities is the responsibility of the 80 provincial and 1,635 city/municipality health authorities, within this very decentralized government system.

Five of the 80 provinces in the country are under the authority of the Autonomous Region of Muslim Mindanao (ARMM), which is a very isolated region of the country affected by serious social and extreme security issues. This includes three LF endemic provinces, five STH endemic provinces and two SCH endemic provinces. In the Philippine bureaucracy, ARMM health workers do not report to the Department of Health but to the Secretary of the DOH-ARMM. This requires greater collaboration and well-managed coordination to ensure the appropriate and timely implement of comprehensive NTD activities in these provinces.

Also, the Philippine government structure is in the process of devolving responsibility and authority for public health program management to the provincial level. All health staff down to the municipal and barangay levels report to Local Chief Executive of the province, and not to the DOH. This means that on the ground implementation requires interface with local government units (LGUs), whose leaders are elected locally and responsible for local agendas and priorities. The Philippines is a large archipelagic with thousands of islands and this geography often impedes timely drug distribution, management of mass drug administration (MDA) and overall communications and coordination of program activities.

Under USAID Cooperative Agreement No. AID-OAA-A-10-00051, FHI 360's End Neglected Tropical Diseases in Asia Project (END in Asia) has been providing support to the National NTD Program in the Philippines since October 2011. Assistance has focused on the three major NTDs that are endemic in the country: Lymphatic Filariasis, Schistosomiasis and Soil Transmitted Helminthes. This support has included funding opportunities for collaboration and coordination, including orientation workshops and forums for provincial health officers and key stakeholders and enhanced opportunities for monitoring implementation in the field. END in Asia has also supported DOH and the Department of Education (DepEd) in the development of new tools, including advocacy materials, integrated monitoring tools, flipcharts, teacher's guides and educational videos. Mass treatment for soil-transmitted helminthes has been expanded to cover all children up to age 14. END in Asia has supported DOH and DepEd in this process through program implementation workshops, technical meetings for medical updates and regional planning, and refresher workshops on mass treatment within the school system. SCH is endemic in 28 provinces in the Philippines, and mass treatment is ongoing. END in Asia has supported DOH to conduct mapping in four additional provinces to determine if SCH is being transmitted into new areas. The project has also supported conferences on updating SCH program guidelines, and training of lower level health workers to improve SCH surveillance. DOH aims to eliminate LF as a public health threat by 2018 and END in Asia has supported them to strengthen elimination efforts through regional workshops and several types of program surveys, as well as assistance with preparing necessary documentation to declare a province LF free. END in Asia has also funded investigations into whether LF may be spreading into new, endemic-adjacent areas.

Lymphatic Filariasis (LF)

Consolidated field reports in 1998 showed a prevalence rate for LF of 9.7% per 1000 population that was used as a national baseline. Results of endemic mapping in 2010 indicated 43 provinces in 12 regions were endemic for LF. In 2001 the LF Control Program shifted to the National Filariasis Elimination Program, with a major strategy of providing mass treatment using the combination drugs Diethylcarbamazine Citrate (DEC) and Albendazole for the entire population two-years old and above in established endemic areas. The Philippine plan was approved by WHO, and the government was provided with a free supply of Albendazole (as donated by GlaxoSmithKline) for filariasis elimination. Beginning in 2003, the program was expanded in phases to include all 43 endemic provinces by 2010.

To date, mass treatment has been on going in all established endemic areas with a Microfilaria Rate of 1% and above. Elimination strategies including MDA activities have been given a high priority by the current DOH management and will continue to do so until 2018 (elimination target). Currently the DOH procures all of the required DEC drugs through local tenders following the strict regulations and quality control requirement of the Philippines Food and Drug Administration, with the required Albendazole provided by GlaxoSmithKline through the WHO managed international drug donation program. The local government units are also able to procure DEC and Albendazole should further supplies be needed

Data on the program start up in each province and annual MDA coverage rates may be found in the Table below, and overall progress summarized in the next Table.

Table 1: Status of LF MDAs in 43 Endemic Provinces by Year

Province	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	Total Rounds
Quezon									66%	74%	78%	3
Marinduque	70%	79%	61%	52%	68%	96%	65%	46%				8
Oriental Mindoro	99%	95%	95%	96%	90%	78%	85%	88%	97%	90%		10
Occidental Mindoro		102%	103%	95%	98%	93%	78%	85%	94%	95%	85%	10
Romblon	73%	77%	60%	83%	83%	79%						6
Palawan				85%	75%	17%	75%	85%	75%	83%		7
Albay	91%	84%	83%	84%	85%	55%	83%	55%	62%			9
Camarines Norte	87%	71%	75%	67%	87%	30%	63%	39%	60%	67%	77%	11
Camarines Sur	87%	75%	73%	66%	80%	39%	73%	51%	61%	60%		10
Catanduanes	91%	88%	100%	90%	89%	30%	80%	17%	61%			9
Masbate	105%	93%	90%	88%	92%	92%	91%	80%	85%	85%	90%	11
Sorsogon	83%	89%	93%	93%	91%	82%						6
Iloilo						65%	66%	83%	82%	92%	88%	6
Capiz							70%	79%	82%	91%	89%	5
Aklan								65%	68%	80%	75%	4
Antique								60%	58%	78%	66%	4
Biliran	102%	90%	88%	88%	65%	51%						6
West Samar	56%	66%	48%	60%	52%	50%	60%	58%	73%	72%		10
East Samar	75%	70%	85%	50%	81%	85%	84%	89%	89%			9
North Samar				43%	24%	31%	32%	29%	51%	46%	76%	8
Northern Leyte	92%	46%	43%	56%	26%	11%	49%	37%	73%	71%		10
Southern Leyte	87%	89%	88%	90%	91%							5
Zamboangal Norte	58%	81%	70%	81%	85%	80%	85%	86%	78%	84%	80%	11
Zamboanga Sur			81%	74%	87%	95%	90%	74%	80%	58%	88%	9
Zamboanga			77%	78%	74%	76%	78%	77%	80%	85%	72%	9

Province	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	Total Rounds
Sibugay												
Bukidnon	62%	91%	89%	77%	77%							5
Misamis Oriental	59%	65%	74%	88%		60%	54%	37%	57%	67%		9
Misamis Occidental		58%	58%	50%	31%	76%	82%	83%	93%	89%		9
Compostela Valley	68%	60%	83%	89%	86%	70%	76%					7
Davao Sur	84%	68%	69%	63%	71%	71%	59%	60%	103%	58%	70%	11
Davao Norte		71%	92%	94%	88%	86%	73%	58%	55%	68%	82%	10
Davao Oriental	82%	72%	85%	89%	81%	84%	78%	86%	84%	63%	76%	11
South Cotabato	72%	78%	15%	72%	34%	21%	71%	71%	88%	80%		10
Cotabato	95%	82%	74%	78%	42%	60%	70%					7
Sultan Kudarat	54%	66%	66%	76%	65%	52%	59%	69%	69%	69%	57%	11
Saranggani	73%	69%	50%	72%	61%	65%	76%	58%	88%	86%	85%	11
Agusan Norte	66%	88%	88%	82%	93%	76%	76%	68%	57%	86%	72%	10
Agusan Sur	98%	91%	89%	81%	76%	96%						6
Surigao Norte	99%	90%	92%	83%	76%	79%	77%	66%	63%	62%	57%	10
Surigao Sur	98%	82%	80%	86%	75%	77%	68%	69%	82%	82%		10
Maguindanao					88%	74%	86%	74%	81%	89%	74%	7
Basilan					40%			33%	26%	38%	48%	5
Sulu					99%	92%	89%	93%	86%	61%	64%	7

Table 2: Overall Progress of MDAs to Eliminate LF

Year	Population at Risk	No. of IUs Targeted	Population Targeted	No. Treated	Treatment Coverage %	Epidemiological Coverage %
	(a)	(b)	(c)	(d)	(d/c)	(d/a)
2003	17,860,201	28	17,596,258	14,163,139	80.5	79.3
2004	19,600,670	31	17,955,366	14,184,739	78	72.3
2005	20,600,072	33	18,321,802	14,016,178	76.5	69
2006	24,892,540	35	22,358,731	16,992,635	76	68.3
2007	25,028,964	38	23,358,741	17,051,880	73	68
2008	26,500,300	36	24,872,633	15,918,485	64	60
2009	27,402,927	36	25,445,576	17,811,903	70	65
2010	24,606,408	34	22,770,829	15,009,908	66	61
2011	24,360,569	34	20,968,776	15,726,582	75	73.6
2012	25,736,598	32	23,529,835	18,143,425	77.6	70.5
2013	19,569,345	22	18,019,633	13,824,366	76.7	70.6
2014	NA	NA	20,343,874	14,949,615	73.5%	NA

To monitor LF in the Philippines, the National NTD Program employs several methods, some specific to the county, including Background Surveillance, Sentinel Surveillance and Transmission Assessment Surveys (TAS). Background Surveillance is conducted in both endemic and non-endemic areas to survey Lymphatic Filariasis focusing on the detection of new foci, collection of data on infection trends and confirmation of the interruption of transmission. Sentinel Surveillance is used to monitor the progress of the Elimination Plan in selected sentinel sites. TAS is used to measure the success of MDA and to provide criteria on judgment in declaring elimination status for provinces.

Thus far, there are 23 provinces that have been able to stop MDAs following several years of high treatment coverage, achievement of a Standard Nocturnal Blood Examination rate of less than 1%,

and a TAS result below the WHO established threshold. A Schedule for Implementation of TAS in the Philippines through 2015 may be found in the Table below.

Table 3: TAS Implementation Schedule 2008 - 2015

	Province	Stop MDA TAS	TAS 1	TAS 2
1	Southern Leyte	2008	2011	2013
2	Sorsogon	2008	2010	2012
3	Biliran	2009	2012	2014
4	Bukidnon	2009	2012	2014
5	Agusan Sur	2009	2012	2014
6	Dinagat Province	2009	2012	2014
7	Romblon	2009	2012	2014
8	Compostella Valley	2010	2013	2015
9	Cotabato Province	2010	2013	2015
10	Marinduque	2011	2014	
11	Eastern Samar	2012	2014	
12	Albay	2012	2014	
13	Mindoro Oriental	2012	2014	
14	Western Samar	2012	2014	
15	North Leyte	2012	2014	
16	Catanduanes	2012	2014	
17	Camarines Sur	2012	2014	
18	Misamis Occidental	2012	2014	
19	Surigao Sur	2012	2014	
20	North Samar	2013	2015	
21	Palawan	2014		
22	Negros Oriental	2014		
23	Masbate	2014		
24	Davao Norte	2014		
25	Iloilo	2014		
26	Mindoro Occidental	2014		
27	Davao Oriental	2015		

28	Saranggani	2015		
29	Maguindanau	2015		

Despite high reported coverage over many rounds, several provinces still have Mf survey results above the required threshold to qualify for a TAS survey and therefore must continue to implement the annual MDAs. This is indicative of the need for more monitoring and supervision as well as more opportunities for dialogue between the national level policy and decision makers and implementers in the field who do not always fully understand the technical requirements of the program or accurately report coverage data.

The DOH requested assistance from END in Asia to facilitate the funding of a series of Workshops to finalize new Guidelines for LF Elimination to reflect recent updates in both technical and administrative components of the National LF Elimination Program, as well as to pilot the development of a LF elimination dossier for six provinces that have achieved all of the WHO requirements for verification of elimination. The DOH also requested assistance to fund LF Mf surveys in three provinces during Year Four, Sentinel Site Surveys in two provinces and a TAS survey in one province during Year Five, all within the difficult to administer ARMM region.

Schistosomiasis (SCH)

In the Philippines, SCH is caused by *Schistosoma japonicum* a blood fluke endemic in certain areas of the Philippines and is transmitted through an intermediary snail host, Oncomelania quadrasi. *Schistosoma japonicum* is one of the most difficult parasites to control due to its zoonotic nature.

SCH in the Philippines has been found to be endemic is 28 provinces, putting a total population of approximately 12 million at risk, with about 2.5 million directly exposed to the disease. The highest prevalence and intensity of infection is among children 5 – 15 years of age and the latest national prevalence rate based on active surveillance is 2.2%. These 28 provinces have been ranked according to levels of endemicity as may be seen in the Table below, using WHO criteria following a baseline survey in 2008. A re-survey is currently being carried out in the three major groups of islands, Luzon, Visayas and Mindanao to re-stratify the endemic areas in the country. With the recurring flooding in these areas, resurgence of cases may result, with a subsequent increase in prevalence rates especially if the cercarial pools from high endemic areas are brought in close contiguity with low endemic areas.

Table 4: Stratification of Schistosomiasis Endemic Areas

Province/Classification		
High (10)	**Moderate (6)**	**Low (12)**
Surigao Norte	Bukidnon	Davao del Sur
Agusan Sur	Lanao Norte	Bohol
Agusan Norte	Zambo Sur	Zambo Sibugay
Maguindanao	Davao Norte	Zambo Norte

North Cotabato	Sultan Kudarat	Davao Oriental
Compostela Valley	Lanao Sur	South Cotabato
North Leyte		Cagayan Valley
North Samar		Sorsogon
Eastern Samar		Mindoro Oriental
West Samar		Surigao del Sur
		Davao City
		Bislig City

Mass treatment throughout all 28 endemic provinces began in 2009, following small pilot activities, but the MDAs were interrupted briefly in 2010 and 2011 in some areas due to a shortage of drugs. MDA coverage improved with the additional supply of Praziquantel donated by USAID through END in Asia and ENVISION in 2012, as a temporary emergency measure. The DOH has subsequently been able to increase their budget allocations for drug procurement to include sufficient Praziquantel for the MDAs in all endemic provinces. MDA are organized annual in July through the local health authorities, with funding provided through local budgets. MDA coverage data may be found in the Table below, and highlights the great variation in accomplishments among provinces. This is indicative of the need for more frequent monitoring and supervision and more opportunities for dialogue and mentoring of field level personnel who often are not aware of technical updates and may incorrectly interpret program guidelines.

Table 5: Schistosomiasis Mass Treatment Coverage 2009 – 2012*

SCH Mass Treatment Accomplishment 2009-2012*												
	2009			2010			2011			2012		
Province	Target	#	%	Target	# Treated	%	Target	# Treated	%	Target	# Treated	%
Cagayan	907	750	82	791	670	84	833	720	86			ND
Oriental Mindoro	44,335	8,907	20	45,097	13,529	30	44,537	24,317	55	44,537	30,196	68
Sorsogon	4,810	3,921	82	23,185	15,395	66	23,043	17,559	76	2,314	1,710	74
Negros Occidental	6,264	2,443	39	6,291	1,384	22	5,806	3,077	53	5,775	1,386	24
Bohol	4,016	3,213	80	3,802	3,213	85	29,484	25,651	87	3,209	3,113	97
N. Leyte	216,41	93,059	43	167,42	78,688	47	173,81	102,55	59	222,24	120,01	54
N. Samar	129,09	46,474	36	111,16	35,574	32	127,27	64,910	51	130,36	65,182	50
Eastern Samar	125,13	86,342	69	121,52	49,826	41	123,65	49,460	40	124,54	70,990	57
W. Samar	68,323	23,913	35	70,200	14,742	21	57,938	27,231	47	64,553	46,478	72
Zamboanga del Sur	81,746	33,516	41	87,355	33,195	38	98,655	28,610	29	98,853	16,805	17
Zamboanga Sibugay	9,544	6,681	70	9,813	3,042	31	9,587	3,643	38	11,869	4,154	35
Zamboanga del Norte	1,956	1,682	86	2,424	2,400	99	2,540	2,515	99			ND
Lanao del Norte			ND	74,601	28,990	39	73,872	30,162	41	74,602	32,668	44
Misamis Occidental	8,979	10,326	115	8,912	6,225	70	8,912	8,608	97	8,912	6,231	70
Bukidnon	194,61	23,724	12	194,52	38,322	20	194,51	85,860	44	194,61	23,724	12
Davao del Sur	54,202	15,827	29	1,548	1,342	87	4,430	3,894	88	1,866	1,679	90
Davao City	10,589	10,271	97	6,208	5,527	89	5,649	4,350	77	8,388	5,368	64
Davao del Norte	18,433	7,152	39	2,546	1,342	53	6,254	4,428	71	3,976	1,511	38
Compostela Valley	20,579	13,541	66	32,741	17,844	55	129,42	88,265	68	134,59	69,989	52
Davao Oriental	5,964	2,481	42	4,737	559	12	8,375	4,648	56	10,017	3,506	35
North Cotabato	36,504	13,762	38	39,370	16,929	43	38,539	15,801	41	38,271	2,679	7
South Cotabato	49,879	4,544	9	62,930	14,474	23	63,943	8,952	14	52,728	15,291	29

Sultan Kudarat	38,036	14,834	39	39,753	18,962	48	33,732	29,347	87	32,756	26,663	81
Agusan del Norte							53,978	22,077	41	53,950	40,786	76
Agusan del Sur				491,48	336,66	69	323,39	221,52	69	312,61	127,48	41
Surigao del Norte							64,342	33,715	52	64,360	10,555	16
Surigao del Sur				71,184	42,995	60	41,783	27,284	65	41,834	9,580	23
Maguindanao	36,287	33,747	93	36,227	32,604	90	36,227	32,967	91			
Lanao del Sur	5,342	4,861	91				6,090	5,024	83	6,092	5,745	94

* SCH MDA data for 2013 is currently being compiled and is not yet available.

In addition to chemotherapy and snail surveillance, the Schistosomiasis Control and Elimination program also focuses on environmental sanitation and engineering, and management of animals to control the spread of the disease. The holistic approach is much more complicated as inter-agency collaboration is required for the control and management of animals, and for environmental engineering to control the habitat of the snails.

The DOH has requested assistance from END in Asia to expand the participation in several key activities within the National SCH Program through a cost share, including training for malacologists, the procurement of GPS devises to better track snail infestations, and the development of a GPS operations manual to instruct the malacologists how to utilize these devises. END in Asia has also funded the mapping of suspected endemic areas in one province in Year Two and in four provinces in Year Four. END in Asia has also funded a Post MDA Consultative Meeting in Year five to review the implementation of the previous round of MDAs and plan the next; a Workshop for Rural Sanitary Inspectors and an Orientation for Local Government Partners both within the ARMM region which has continued to lag behind the other regions in the country in coverage and quality of the MDAs. The DOH also received assistance to better organize and promote the MDAs at the community level in several underserved areas in the ARMM region.

Soil Transmitted Helminthes (STH)

STH is endemic in all 80 provinces in the Philippines with varying prevalence rates among provinces and among different population groups. Before the beginning of the MDA program in 2003, the prevalence rate among 6 to 14 years olds was 65 % according to research by the University of the Philippines, while in another survey done by DOH, University of the Philippines and UNICEF in 2004, the average prevalence rate among 1 to 5 year olds was 66%.

The national STH deworming program in the Philippines, which was expanded to national scale in 2006 following several small pilot interventions in selected areas, represents an intra- and inter-agency exercise. The target population is divided into school-age and pre-school age children, enrolled and non-enrolled children, and special population groups. The 1 to 5 year olds (pre-school age children) are dewormed in Rural Health Units (RHUs) by the Family Unit of DOH (a unit that does not belong to the Infectious Diseases Office that is in charge of the NTD control and elimination programs). The school-age children (SAC) of 6 to 12 years old that are enrolled are dewormed by the DepEd and Nutrition Center. Non-enrolled children ages 6 to 12 years are dewormed in RHUs together with special target population groups such as pregnant women, farmers, indigenous people, soldiers, and food handlers.

A special call from the Department of Social Welfare and Development came in late 2011 to expand the deworming program to reach all those in secondary schools or up to age 14 within the DepEd's revised school system. In addition to expanding the reach to children aged 14, the school system now officially accepts elementary pupils beginning age five. All these changes required revisions of

key policies and implementation guidelines, which were developed and finalized with assistance from END in Asia. The schedules for deworming in schools and in RHUs are different, with pre-school children receiving treatment in April and October each year, and school aged children in January and July. All operational costs for the relevant MDAs are provided by either the DOH (pre-school children) or the DepEd (school aged children) through their routine budgets. All drugs for the MDAs are procured locally with funding from the DOH budget, except for a small quantity of Mebendazole (MBD) which is donated annually by Johnson and Johnson for use with marginalized groups in special areas. Relevant data on numbers of children treated each year may be found in the Table below.

Table 6: STH MDA for Children of School Age Reported Coverage

Year	No. of Children Targeted	Treated	Treatment Coverage %
2007	28,940,219	14,614,811	50.5%
2008	14,925,437	7,164,210	48%
2009	30,046,055	19,529,936	65%
2010	34,147,270	19,293,208	56.5%
2011	24,431,910	16,125,061	66%
2012	26,994,864	18,839,310	70%
2013	33,287,728	5,171,960*	

* 2013 STH MDA data is still being compiled and is currently incomplete.

In order to monitor the impact of the MDA program after several years of implementation and to provide an update on current prevalence rates, the DOH has commissioned a nation-wide STH prevalence survey among school aged children through its research arm, the Research Institute for Tropical Medicine, which is expected to conclude in early 2015.

To control and eliminate STH as a public health concern, the DOH recognizes that chemotherapy alone will not be sufficient. The DOH has therefore adopted an integrated approach called "WASHED" — water, sanitation, hygiene, education and deworming. Within the DOH, several programs exist which are viable mechanisms to operationalize an integrated approach in preventing and controlling STH infections more effectively and efficiently. For example coordination with the DOH unit handling environmental concerns is important to integrate all related efforts to ensure better complementation of resource, obtain higher coverage and generate better health outcomes. Such coordination will need to be expanded to include other national and local agencies and organizations engaged in providing relevant services.

Although the STH program is a mature, well-managed program, the DOH has requested support from END in Asia to enable them, together with the DepEd, to better coordinate the STH program through a series of routine Regional Consultative Meetings across the country as well as a special Regional Consultative Meeting focusing on the unique implementation problems in the ARMM region. END in Asia has also funded national level meetings and workshops to finalize a new joint Administrative Order and a Manual of Operations for the STH program to officially reflect recent technical and administrative updates for the National STH Control Program.

General Program Support

END in Asia has also supported the DOH to strengthen the comprehensive NTD program through:

- Consultant Services from an outstanding local NTD manager and administrator over the life of the project;
- Training for NTD case managers and program implementers in the ARMM region;
- Integrated program implementation reviews, annual National Stakeholder Meetings, and program management meetings at various levels of the government;
- Monitoring and Supervision of a large variety of NTD activities at lower levels across the country;
- Organization of annual National NTD Implementer Forums which bring together all supporting partners including local NGOs and private sector foundations to acknowledge their crucial contributions to the NTD program as well as advocate for continuing collaboration;
- Innovative Communications including NTD booklets and a variety of other IEC materials for school children, a series of Videos explaining NTD infections and prevention measures, Data Maps for provincial and district decision makers as well as an intriguing Audio Visual Production to explain the data for use on tablets and over the internet; and a Best Practice publication to advocate for continuing improvements in the implementation of NTD activities across the country.

Comprehensive Summary

National NTD Response in Vietnam

Vietnam Summary

The **Department of Preventive Medicine, Ministry of Health** (MOH) is now officially responsible for the coordination and management of the National NTP Program, which includes multiple diseases. The **National Institute for Malariology, Parasitology and Entomology (NIMPE)** is responsible for the Lymphatic Filariasis (LF) elimination program as well as Soil Transmitted Helminthes (STH) control activities. The **National Institute of Ophthalmology (NIO)** is responsible for the provision of eye health care, including the management of Trachoma control and elimination.

These national level agencies are mirrored at the provincial level with corresponding units within the Provincial Department of Health, and at the district level within the District Health Division. Most development funding including public health and health care is controlled and managed at the provincial level, through autonomous budgeting and accounting under the management of the Provincial People's Committee. The national level has only very limited resources available to fund the implementation of certain innovative or pilot activities; while their major focus is providing direction, guidance, control and inspection of professional services to the lower levels. Basic health care and the management of local public health interventions is the direct responsibility of Commune level health facilities.

USAID support for the National NTD Program in Vietnam through the END in Asia project, began in October 2011 following extensive planning throughout the previous year.

END in Asia support to NIMPE has focused on the (1) collection of appropriate data to certify the elimination of Lymphatic Filariasis (LF) in the country, as well as to assess the status of morbidity control among LF patients leading towards the drafting of an official dossier for LF elimination for submission to WHO; (2) implementation of nation-wide prevalence surveys and sentinel/spot checks for Soil Transmitted Helminthes, as well as mass drug administration (MDA) for children of school age and women of reproductive age in selected endemic provinces; (3) development of a national communication strategy for STH and a wide variety of exciting IEC materials; and (4) organization of a series of workshops and meetings at various levels to strengthen the management and implementation of the LF and STH control program. END in Asia has also assisted the NIO to organize a national level assessment of trachoma including the required training, supervision, data management and technical support to determine the status of the disease.

Lymphatic Filariasis

The National Institute of Malaria, Parasitology and Entomology (NIMPE) has carried out extensive microfilaria (Mf) prevalence surveys in the six regions of the country during the last five decades (1960-2005) to assess the LF prevalence levels. In 1998 a major review of the LF was conducted showing that: (i) northern provinces continued to have higher prevalence than the southern parts; (ii) distribution of LF is very heterogeneous - some provinces (Ha-Nam-Ninh, Hai-Hung, Ha Noi and Quang Binh) have pockets of very high prevalence of LF, in which up to 20.50% Mf prevalence was recorded during 1960-75 period and many provinces showed very low or 0% Mf prevalence; (iii) there had been a tremendous decline, without any intervention measures, over a period of 20 years (1960-75 to 1976-86) in highly endemic provinces and the decline was as high as 100% in some parts of the provinces; (iv) such a decline was most probably due to combination of factors such as improvement in housing and living conditions, man-made ecological changes leading to decimation of breeding places of mansonioides mosquitoes and use of bed nets and treatment of mf carriers detected in surveys; (v) >1.0% Mf prevalence appeared to be not uncommon in 1990s; (vi) the

epidemiological data were used to construct a filariasis map of Vietnam, according to which 13 of 52 provinces had localities with Mf rate ranging from 1.0% to 7.5%.

Data collected after 2000 shows that the declining trend of LF continued. Surveys carried out in 2003 and 2005 suggested that the provincial level Mf remained at <0.5% in all provinces. The LF situation after the year 2000, when the Global program to eliminate LF was launched, can be summarized as follows:

Table 1: Classification of Regions in Vietnam by LF Endemicity

Region	# of Provinces	# of Districts	1960-1980	1981-2000	2003-2005
Red River Delta	11	113	High	Moderate	Very Low
Northern Midland & Mountain Area	14	119	Very Low	*	Non-Endemic
North Central Areas & Central Coastal Areas	14	148	High	Moderate	Low
Central Highlands	5	52	*	Non-Endemic	Non-Endemic
South East	6	60	Non-Endemic	Non-Endemic	*
Mekong River Delta	13	111	*	Very Low	Non-Endemic

** No surveys carried out*

Following the WHA resolution passed in 1997 to eliminate LF as a public health problem, the MOH and NIMPE started the MDA based LF elimination program in the year 2003.

Prioritization of Districts: The district, of which the average population size is about 110,000, was determined as the Implementation Unit (IU) for MDA. For selecting the districts to implement MDA, the program carefully reviewed all the available Mf survey data from the 1960s onwards. Although the Mf prevalence has been showing declining trends over the 1960-2000 period, NIMPE initiated extensive Mf surveys in different provinces of both the endemic regions (River Delta and the North Central and Central Coastal Area) in the year 2003. The objective of these surveys was to assess the Mf prevalence in all the provinces of both the regions and identify the endemic provinces/districts that require MDA to eliminate LF, which led to the classification of regions into two categories.

(a) Non-endemic regions: four regions were either non-endemic from 1960s or progressed from very low endemic to non-endemic status by 2003-05. This situation did not warrant any intervention measures; hence, no MDA was implemented in these four regions.

(i) Northern Midland & Mountain Area
(ii) Central Highlands
(iii) South-east
(iv) Mekong River Delta

(b) Endemic regions: All provinces in Red River Delta region and some provinces of North Central Area & Central Coastal Area region were found to be endemic. Within the provinces, Mf prevalence levels were high in some districts and Mf rate of as high as 20-22% was recorded in some districts of

both the regions during 1960s and 1970s. Nevertheless, the Mf prevalence showed consistent declining trend from 1970s onwards. Surveys carried out in 2002 and 2003, i.e. on the eve of starting the MDA, revealed very low Mf prevalence rate with the highest rate at 3.6%.

(i) The Red River Delta region
(ii) North Central Area & Central Coastal Area region

MDA Activities: Tremendous decline of LF in most districts across the country augured very well, but it was decided that MDA would be required in six districts located in four provinces. The MDA program was started in the year 2003 in two IUs (districts) - Phu Cu in the northern province of Hung-Yen and Khanh Vinh – in the south-west province of Khanh Hoa. In 2004, the program was extended to the other four endemic districts. The combination therapy of DEC+ALB was used in the program. In the two intervention districts (Phu Cu & Binh Luc) of the Red River Delta region, drugs were distributed from a central place – all the people in the villages were encouraged to visit the commune and collect and swallow the drug. In the four districts of the North Central and Central Coastal Area region, drugs were distributed by the health staff house to house and also in public places. The program was supported by IEC campaign that included distribution of leaflets, display of posters, mass media campaigns and megaphone announcements. The information, education and communication (IEC) activities improved the knowledge levels of people on LF and its elimination.

By 2008, all the six IUs had received five MDAs each (Table below). The program achieved a very impressive treatment coverage rate, which ranged from 78% to 95% (Table below). The high treatment coverage and successful implementation of the program may be attributed to: (i) limited number of IUs; (ii) easy accessibility of the communities by road, particularly in the plain areas; (iii) established health system of community health centers; and (iv) the DEC chemotherapy was well received by the community.

Table 2: Mass Drug Administration of DEC+ALB, 2002-2008

Year	No. of IUs requiring MDA	Total population of IUs that require MDA	No. of IUs included in MDA	Population that included for MDA	Geographical coverage (%)	% of pop. Included for MDA	No. of people treated	Treatment coverage (%)
	(a)	(b)	(c)	(d)	(c/a)	(d/b)	(e)	(e/d)
2002	6	670,500	1	88,200	17	13	76,339	87
2003	6	671,780	2	117,205	33	17	105,079	90
2004	6	675,215	6	667,765	100	99	587,818	88
2005	6	681,568	6	671,780	100	99	569,499	85
2006	6	681,568	6	675,215	100	99	599,938	89
2007	6	681,568	6	681,568	100	100	588,464	86
2008	4	681,568	4	539402	100	79	488,273	91

Table 3: Treatment coverage of MDAs implemented, 2003-2009, by district

District	Treatment coverage (%)							Total MDAs implemented
	2003	2004	2005	2006	2007	2008	2009	
Binh Luc*	-	*89%*	*89%*	*89%*	*91%*	*89%*	*MDA stopped*	*5*
Phu Cu*	*86%*	*86%*	*86%*	*99%*	*87%*	*MDA stopped*	-	*5*
Dien Kanh**	-	*89%*	*83%*	*85%*	*88%*	*78%*	*MDA stopped*	*5*
Khanh Vinh**	*87%*	*89%*	*88%*	*95%*	*87%*	*MDA stopped*	-	*5*
Ninh Hoa**	-	*88%*	*87%*	*92%*	*89%*	*84%*	*MDA stopped*	*5*
Bac Ai**	-	*83%*	*81%*	*93%*	*85%*	*94%*	-	*5*

Treatment coverage refers to the proportion of people treated in relation to the total population of IU

** Predominate parasite B. malayi. ** Predominant parasite W. bancrofti*

Impact of MDA: The impact of MDA was assessed by monitoring and evaluating changes in Mf prevalence at sentinel sites and spot-checks in all the six IUs. In each IU, 1-2 sentinel sites and 2-5 spot check sites were evaluated. The baseline Mf rate ranged from 0.0% to 10.0% in different sites. The Mf prevalence fell from the pre-intervention level of 0.0%-10.0% to 0.0%-1.9% after two rounds of MDA, with most of the sites recording 0.0% prevalence. After four rounds of MDA, all the sites showed 0.0% Mf prevalence (Table below). Hence, after five rounds of MDA, completed in 2007-08, MDA was stopped in all IUs.

Table 4: Impact of MDA on Mf prevalence in sentinel and spot-check sites

District	Type of site	Base-line	2005 (Post-2nd / 3rd MDA)	2007-08 (Post-4th / MDA)
Binh Luc*	SS	1.2	0.0	0.0
	SC	0.0	0.0	0.0
Phu Cu*	SS	0.1	0.0	0.0

	SC	0.0	0.0	0.0
Dien Kanh**	SS SC	0.8 0.0	0.0 0.0	0.00
Khanh Vinh**	SS SC	3.6 --	0.0 0.0	0.0 0.0
Ninh Hoa**	SS SC	10.0 0.0	1.9 0.0	0.0 0.0
Bac Ai**	SS SC	0.4 0.0	0.2 0.0	-- 0.0

**Predominant parasite B. malayi*

***Predominant parasite W. bancrofti*

Transmission Assessment Surveys (TAS) in Vietnam: WHO guidelines recommend that pre-TAS sentinel and spot-check Mf surveys should be carried out after five rounds of MDA. If results are <1.0% Mf prevalence, then Stop MDA TAS surveys should be implemented. However, the program in Vietnam conducted the Mf surveys in sentinel and spot check sites after four rounds of MDA, and found that the Mf levels were already very low. Since, thee sentinel and spot check sites showed much less than <1.0% microfilaraemia, a school based TAS was implemented in each of the six intervention units. In the four intervention units where *W. bancrofti* was endemic, antigenaemia prevalence was assessed using the ICT card test. In the other two IUs, where *B. malayi* was endemic, community based Mf surveys were conducted on 6-7 year old children using cluster sampling.

The surveys included 48-100% of the communes/schools and 12-45% of the children, suggesting that the samples sizes are much higher than required, which enhances the robustness of the results. These results showed 0% antigenaemia or microfilaraemia prevalence in 5 IUs. In the sixth IU – Ninh Hoa- 0.1% children were found to be positive, which is well below the threshold level. These results showed that further MDA was not required in any of these IUs.

LF Contact Surveys and Treatment: During the 2011 round of TAS, on child was found to be LF positive, which triggered the organization of a LF contract survey in Song Bung village, Khanh Hoa province in November 2011 with the assistance of END in Asia. ICT tests were administered to 300 individuals who lived in the vicinity of the one LF positive child. Two additional positive cases were found, and therefore the entire community was provided with treatment. Since prevalence remained well below the WHO criteria, there was no need to reestablish Mass Drug Administration in the area.

Training on the Transmission Assessment Survey (TAS) Methodology and Practice: With the support of END in Asia, six groups of provincial and district level laboratory technicians from all four endemic provinces during January 2013. Between 30 and 50 technicians participated in each group. This training focused on the correct use of the ICT and Brugia tests to test for LF, as well as appropriate sampling methodologies and reporting requirements in preparation for the next series of TAS surveys to be implemented beginning in March 2013.

TAS I and TAS 2: In 2013, with the support of END in Asia, a round of TAS 1 surveys was implemented throughout the endemic areas to confirm the interruption of transmission. Following recent changes in the WHO guidelines, the six endemic districts were reorganized into four Evaluation Units (EU) for these surveys. (The IUs in Vietnam are smaller and located in the middle of other districts with history of endemicity. In such situations, it is ideal to conduct the active surveillance at provincial level, i.e. to include the entire province or all the districts of the four provinces for active surveillance, with some emphasis on the endemic districts. Thus, the EU was determined to be a province instead of a district. This has required only a little extra money and effort, but has ensured that the IUs and also the other districts, some of which were highly endemic in the past, are completely free from residual infection.) The Brugia Rapid Test was used in the two EU endemic for *B. malayi* as now recommended by WHO, while the other two EU used the standard ICT test. Results of the TAS 1 surveys in all four EU were negative, with no positive cases found.

In April and May of 2015, END in Asia supported the second and final round of TAS surveys, as recommended by WHO to ensure the interruption of transmission. Brugia Rapid Tests were used in two EU and ICT tests were used in the other two EU. Results were conclusive, transmission of LF remained interrupted, and Vietnam could proceed with developing a dossier for the verification of the elimination of LF to be submitted to WHO, prior to officially declaring elimination of the disease.

Table 5: Schedule of TAS Surveys

Evaluation Unit (Province)	Implementing Unit (District)	STOP MDA TAS	TAS 1	TAS 2
Ha Nam	Binh Luc	2010*	2013	2015
Hung Yen	Phu Cu	2010*	2013	2015
Khanh Hoa	Dien Kanh	2010	2013	2015
	Khanh Vinh	2011		
	Ninh Hoa	2011		
Ninh Tuan	Bac Ai	2011	2013	2015

LF Morbidity: A quantitative **Assessment of LF Morbidity,** including of the current numbers, status, and quality of care of LF patients, was organized in November and December 2012 with funding from END in Asia using a representative sample of five provinces where endemicity was highest. A total of 489 cases were identified across the five provinces, with a mean age of 71.5 years (min 20 and max 98).

LF Elimination Dossier Preparation: END in Asia was able to arrange for the technical assistance of a highly respected regional LF expert through the USAID-funded ENVISION project to assist NIMPE in compiling all of the required documentation and data, and drafting an official dosser for LF elimination in June 2015 to be submitted to WHO for review and verification following the necessary approval from the Ministry of Health.

Trachoma

Published information on trachoma in Vietnam is available for the period starting from the 1950s, when trachoma was a serious public health problem in the country. For several decades, trachoma was considered to be the leading cause of blindness with nearly 70% of the population around Hanoi suffering from trachoma at some time during their lives.

The National Blindness Prevention Programme was established at the National Institute of Ophthalmology, MOH in 1986. As a result of several years of control operations, the prevalence of trachoma declined from 50-90% level in 1950s to 7.04% in the 1990s.

Despite decades of work on Trachoma, the data available are fragmented and do not necessarily reflect the current situation. Despite this, there was sufficient evidence to indicate that active trachoma may have been eliminated from Vietnam. Trachoma was already in decline when the SAFE strategy was launched in Vietnam. There is considerable evidence of a good educational effort (developed by the International Development Enterprise) that would have contributed, along with antibiotics, to elimination. That said, the available evidence was not conclusive and better evidence was needed.

END in Asia, with considerable technical assistance from the Global Trachoma Mapping Project through the ENVISION/RTI Technical Assistance Facility, assisted the NIO to develop a protocol for a representative, population-based National Assessment of Trachoma in early 2014. Following comprehensive training of survey teams in May 2014, data collection began in June 2014 in each of the eleven Evaluation Units representing both the areas previously known to have significant prevalence of Trachoma as well as the major geographical regions of the entire country.

Eleven survey teams, each consisting of a certified Trachoma eye grader and a data recorder, simultaneously assessed the status of Trachoma in each of the eleven selected evaluation units, included clinical eye examinations on approximately 50 children between the ages of one and nine as well as adults over 45 years of age for signs of trachoma infection. All data were uploaded automatically to the “cloud” and managed with the assistance of the Global Trachoma Mapping Project in Atlanta. All eleven surveys were completed by September 2014, and preliminary analysis of the data was completed by the international trachoma experts in collaboration with WHO.

During this review, several issues were identified that required further clarification, including a more intensive investigation of one potential Trachoma hotspot in Ha Giang province where several TF cases were found. In January 2015, after a protocol was finalized and the survey teams trained, the National Institute of Ophthalmology implemented an “Intensive Investigation of a Potential Trachoma Hotspot” in Ha Giang province. This investigation involved the clinical examination of approximately 350 children between the ages of 1 and 9 years old from seven villages in the potential hotspot, with conjunctival swabs taken from all suspected positive cases for laboratory analysis. A total of 32 children, out of the 392 examined, presented with clinical signs of infection that may be caused by *chlamydia trachoma*. Laboratory assessment of the conjunctival samples taken from each of these children was then required to determine if these infections were indeed trachoma. Arrangements were made with the Microbiology Laboratory at the National Lung Hospital to organize the PCR testing of these samples using the appropriate commercially available assays. Results confirmed the presence of chlamydia trachoma, but expert opinion suggests that these infections have been caused by paratrachoma which does not cause blindness and is not a public health concern. To confirm the situation a Follow Up Investigation in the same seven villages in Ha Giang province was organized in August 2015. Results were surprising. Of the 467 children examined, 76 active cases of TF were found (16.3%). This would seem to indicate that active

transmission of blinding trachoma is still taking place, probably from outside of the immediate area. Additional surveys in neighboring areas and an appropriate schedule of treatment would seem to be needed. The team of trachoma experts, including WHO, are currently reviewing the data, will their recommendations for next steps should be available before the end of 2015.

Analysis of the TT results from the National Trachoma Assessment have also been completed and compared with local census data to determine the estimated number of TT surgeries that are now required to meet WHO criteria for the elimination of Trachoma as a public health issue in Vietnam. All results have been included in the final report for the comprehensive National Trachoma Assessment, including recommendations for next steps that need to be taken before Vietnam will be able to fulfill WHO criteria for the elimination of Trachoma as a public health concern.

Soil-transmitted Helminthes

STH has been a very serious public health problem in the country, with some foci recording up to 90% prevalence levels. Sixty-seven of the total 86 million population (53 of 63 total provinces) live in endemic areas. The high risk and most affected population include 4 million pre-SAC, 6 million SAC and 19 million WCBA. Responding to the call given by the WHO, Vietnam started an ambitious STH control program for SAC in 2000-01 in 6 districts across 6 provinces. By 2002-03, the program covered 11 provinces and expanded to cover 42 endemic provinces in 2006 before having to cut back MDAs due to budget constraints. Currently 31 provinces are implementing MDAs, delivering over 3 million treatments per year to SAC. The program was extended to pre-SAC in 2007 to target an additional 1-2 million children each year. Mass treatment was further extended to WCBA in 2006. By 2012, WCBA living in 14 provinces were treated with 4.29 million treatments. Treatment coverage by province has been consistent and always higher than 90%.

To assess the impact of the MDA as well as the current status of prevalence, a series of Nation-wide Prevalence Surveys of STH among Children of School Age, funded by END in Asia, was implemented across 12 provinces selected as representative of each major geographic region in the country. Four provinces were assessed in October 2011, four additional provinces were assessed in March 2012, with the final four provinces assessed in April 2012. Results show a wide variation in prevalence rates, both by province as well as within each region, with rates between 1.8% and 34.8%. Intensity of infection was predominately light, with only five provinces showing medium intensity rates, and only one with heavy infection rates. With significant variation in prevalence within as well as across provinces, analysis of the overall situation of STH in the country is difficult based on this information alone.

STH MDA Activities: Since 2000, NIMPE has conducted at least 14 rounds of deworming. The total population at risk in Vietnam is over 25 million individuals, compromising three distinct risk groups; 6 million preschool children, 7.2 million school children and 12 million women who live in areas where prevalence of STH is moderate to high. The main STH control strategy is regular distribution of ALB (or Mebendazole) to the three groups at risk. STH are highly prevalent in the majority of the provinces due to humid climatic conditions favourable for transmission, lack of proper sanitation and presence of certain unhygienic practices such as the use of human excreta as fertilizer.

Table 6: Ecological zone-wise at-risk population and STH prevalence at baseline

Ecological Zone	Population (millions)	STH prevalence (%)
Midland & northern mountainous	11.21	65.3
Red River Delta	19.65	58.2
North Central & Central coastal	19.82	42.2
Highlands	5.00	30.2
South-east	12.83	29.0
Mekong River Delta	17.70	12.0-14.3
Total	86.21	

Control program for SAC: The STH program for SAC aims to cover 6 million children in 53 provinces. During 2000-01, a pilot scale program was implemented in 6 districts located in 6 provinces. Subsequently, the province was designated as the IU. During 2002-03, the program was implemented in 11 provinces and thereafter it had been gradually expanded. By 2007, MDA was in place in 42 provinces, but because of budget constraints further expansion has not been possible. In fact, in 2008-09 only 30 provinces were able to implement MDAs. Currently, 36 provinces have routinely been able to implement MDAs for their SAC populations, as shown in the Table below. The treatment coverage per province has been very impressive and always exceeded 95%. Overall, adverse events were reported only by 0.13% of SAC and included stomach ache, headache, nausea and vomiting.

Table 7: Scale-up of MDA program for SAC, 2001-2012

Year	No. of provinces included	No. of SAC targeted (millions)	Treatment coverage (%)
2000-01	6 (included only 6 districts)	0.41	98.1%
2002-03	11	1.71	95.2%
2004-05	22	4.26	97.6%
2006-07	42	6.79	98.7%
2008-09	30	6.42	98.5%
2010	40	5.47	99%
2011	36	4.44	99%
2012	36	3.32	98.2%
2013	36	NA	NA

During the initial years (2004-08), only one MDA per year was implemented. However, from 2008 onwards, annually two rounds of MDA annum were implemented in highly endemic provinces, as outlined by the WHO. Out of 53 endemic provinces, 36 provinces have been consistently under

MDA, with regions that accounted for large proportion of endemic geographical areas receiving higher proportion of MDAs.

END in Asia has provided financial support to NIMPE to implement MDAs for children of school age in ten provinces during Year Two, 12 provinces during Year Three and 11 provinces during Year Four, before cessing support for the STH program at the request of USAID.

NIMPE is currently supporting MDAs for STH for Children of School Age in 36 of the 54 endemic provinces, with regular distribution of drugs either once or twice a year depending on the level of endemicity of the province. Coverage rates of all MDA in all provinces remain very high, averaging between 90% and 95% of the targeted populations. MDAs for children of school age are organized through the national school system, with remarkable results following many years of experience.

NIMPE has also used END in Asia funding to set up a series of pilot STH Sentinel Site Prevalence Surveys in line with the recent updated guidelines from WHO in order to better track the impact of the MDAs for STH and to gage when the frequency of the MDAs might be reduced. Sentinel sites were selected in eight provinces and the appropriate testing using the Kato Katz method was completed in February 2013. Results showed a large amount of discrepancy of infection rates within geographic areas, and will need further tracking over time to provide sufficient evidence to warrant a reduction in the frequency of MDAs.

Control Program for WCBA: In 2006, the STH program was extended to cover WCBA. It was implemented in two provinces in 2006 and extended to 10 provinces by the end of 2010, and into 14 provinces in 2012. The program is coordinated by the Health Department. Drugs are administered either at commune health centers or at households. A single dose of 400 mg of ALB is administered either alone or in combination with iron supplementation. Between 2006 and 2012, a total of 10,680,000 treatments were given for the WCBA (Table below). END in Asia provided financial assistance to NIMPE to support MDAs for WCRA in three provinces during Year Two and Year Three.

Table 8: Scale-up of MDA program for WCBA, 2001-2012

Year	No. of provinces included	No. of WCBA targeted (millions)	Treatment coverage (%)
2006-07	2	0.18	96%
2008-09	2	0.37	96.7%
2010	10	2.9	94.8%
2011	10	2.94	93.2%
2012	14	4.29	91.9%

END in Asia has assisted NIMPE to organize a series of coordination meeting and national workshops focusing on STH beginning in 2012 to help improve the quality of coordination and implementation of the STH program. Also, following a small number of serious adverse effects during STH MDAs during the last two years, NIMPE recognized the immediate need to update STH program guidelines and emphasize the appropriate management of adverse effects.

General Support

Throughout the END in Asia program, a small team of communications experts from the FHI 360 country office in Vietnam worked closely with NIMPE to assess their current communication

materials and develop a Comprehensive Communication Strategy to better promote both the MDAs for STHs, as well as the critical behaviors associated with inhibiting transmission of the infection such as hand washing, wearing shoes, etc. The collection of current materials used by several existing programs related to sanitation, nutrition and STHs was compiled, and field visits to selected provinces were organized to gather more input from crucial stakeholders on the current status of IEC materials and what was needed in the field. The completed Strategy than become the basis to develop a series of extremely creative and innovative IEC materials targeting school children and their teachers, including comic books, posters, stickers, rulers, a calendar and a guide book on use of the materials. These materials were printed and disseminated first in four pilot provinces during the MDA for STH in May 2013. Following rigorous assessment, the materials were further refined and reprinted, and were distributed widely in priority provinces during Year Four of the program. These materials have since been shared with other projects as well, and are now used widely throughout the school system to better promote the important behavior changes required to better prevent NTDs infection in the future.

END in Asia as also assisted NIMPE to organize a National NTD Stakeholder Meeting in 2011, which focused on reporting successes of the various NTD programs, improving coordination and collaboration among the various GOV agencies involved in managing the various responses to NTDs across the county, and advocating for stronger support and increased funding from the government for these important NTD programs.

Section Three

Lessons Learned

Lessons Learned

Country Ownership. Most development programs emphasize country ownership, but many to not deliver. Under END in Asia, we have committed ourselves completely to ensuring unquestioned ownership of all project supported activities by the national NTP program in each country. This has contributed to the quality and success of all END in Asia funded activities, and has ensured the sustainability of these programs well beyond the close of END in Asia. We have positioned the program to help each national NTD program to fill in the gaps, improve the management, and extend and strengthen their own national response. They have maintained complete control, make all of the decisions, and continue to be fully responsible for all implementation. There have been times when it would have been much easier and perhaps more efficient for END in Asia to take over an activity, but we have resisted this urge, realizing that in the long run, country ownership is much more important than either ease or efficiency. Now that we are facing the close out of the project, it is very clear that our approach has been correct. Each of our focus countries will continue their excellent comprehensive responses to NTDs under their own steam, relying mainly on their own resources. They will sorely miss the collaboration with USAID and END in Asia, and some may need to cut back on important activities; but all will definitely forge ahead towards meeting their control and elimination goals. These countries are committed and determined, and definitely own their own programs. END in Asia has helped to strengthen that commitment and determination, without assuming any of the control or responsibility for the management of a country's program. Just as it should be.

Flexibility. One of the most important attributes of END in Asia has been flexibility. We have tried to instill flexibility in all aspects of the project. Beginning with the design of the project activities, determining the funding mechanism to be used, through to deciding what support staff and technical assistance would be required, we have strived to respond to the real situation in each country with maximum flexibility. No cookie cutters were used in our program. In two countries we determined that FOGs would be the most efficient and appropriate mechanism to provide funding support. In other countries where using FOGs was not possible for a variety of practical reasons, we quickly developed more appropriate mechanisms, either through direct financial administration of the funds by END in Asia staff or seconding staff to the ministry of health to assist them with the management of the funds. In some countries we have provided funding to support the organization and implementation of MDAs, while in other countries, where they have committed to funding these crucial activities with their own resources, we have supported activities to strengthen the management and promotion of the MDAs. The key mantra throughout the END in Asia program has been to respond to the real needs of each country in the most appropriate way. This means recognizing that each country is very different, each MOH is organized differently, and each national program is in a very different place within their responses to NTDs; and then creatively developing an individual approach to providing the specific support that is necessary to help strengthen and improve each individual program.

Technical Assistance. END in Asia and all of our focus countries have benefited greatly from a variety of outside, expert technical assistance, most provided through the TAF mechanism within the ENVISION project managed by RTI. This assistance has been critical in both the design and monitoring of our support to each country, but more importantly invaluable in clarifying policies,

procedures and guidelines, and assessing the strengths and weaknesses of the national NTD response in each of our focus countries. Although WHO would definitely like to take the lead in providing technical advice and assistance at the country level, they simply do not have the resources or skilled manpower to do this. It will be critical to the ultimate success of the national NTD program in each country to have access to, receive advice from, and maintain an active working relationship with outside technical experts proficient in the practical application of programming for each of the various NTDs.

Collaboration. END in Asia is not the only player providing assistance and support to the national NTD programs in our focus countries, and active collaboration with all of the other organizations supporting NTD work in each country has been absolutely critical. Since country ownership is also extremely important, we have found it most appropriate to empower the national NTD program in each country to function as the official coordinator of the network of outside assistance, though direct bilateral relationships with some of the other major donors/NGOs involved in NTD work in a country has also been very beneficial. We have managed to avoid any overlap or competition in our various assistance packages, and have established an amazing and enlightened approach to working together to address the real needs of each country in the most efficient way. In some countries the WHO country office has been a very active and important collaborator, while in other countries the WHO country office has been non-responsive. The important lesson learned is that the management of the national NTD program in a country needs to be encouraged and supported to establish an inclusive policy of active collaboration with all NGOs, funders, programs, projects and other interested parties. This is sometimes easier said than done, but essential to the success of a comprehensive national response to NTDs.

Data Collection and Management. Data is extremely important and necessary for the proper management and oversight of any NTD intervention. Unfortunately, we often forget the two cardinal rules of data management: (1) only collect the data that you will actually use; and (2) data collection must be aggregated up so that only consolidated data is reported to the higher level. Within the USAID NTD projects as well as within WHO NTD data reporting mechanisms, there are often unrealistic expectations as well as requirements for reporting data that is never actually used. We need to realize the importance of establishing reliable yet practical and cost-efficient data collection mechanisms. Often we don't really need "perfect" data, when "good enough" is good enough to achieve our purposes. Expecting timely, complete, accurate, and detailed coverage data from every village in every country, in some cases twice a year, is basically unrealistic in most countries; and would require manpower and electronic IT support well beyond the capacity of most MOH, much less the usually under-resourced national NTD programs. Most of WHO guidelines for the control and elimination of the various NTDs include many checks and balances, with most major decisions based on multi sources of evidence, such as both coverage data and results from surveillance surveys. This approach eliminates the need for abundant and absolutely accurate data from the field, and allows more flexibility, realism and balancing of limited resources while still achieving reliable, evidence-based decision making.