

# **Lymphatic Filariasis Elimination Program**

## **Annual Report (2017/18)**



**Government of Nepal**  
**Ministry of Health & Population**  
**Department of Health Services**  
**Epidemiology and Disease Control Division**  
Teku, Kathmandu





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Ref. No.

Date: July 13, 2018

## PREFACE

It gives me an enormous pleasure to know that Epidemiology and Disease Control Division, Department of Health Services, Ministry of Health and Population is going to publish "Lymphatic Filariasis Elimination Program, Annual Report 2017/2018". This is a comprehensive report covering historical achievements and analysis of Lymphatic Filariasis Elimination (LFE) Program with the major activities conducted during the fiscal year 2017 and 2018 (2074/75).

Lymphatic Filariasis (LF), is a highly disfiguring parasitic disease which sustained as one of the major public health problem of Nepal. Government of Nepal has strong commitment to eliminate LF as a public health problem by the year 2020. And, I would like to reiterate this strong government commitment for its elimination here.

I hope that this report will be of great use to health planners, policy makers, researchers, health institutions, public health students and all those interested in public health. This report will be instrumental in understanding the Lymphatic Filariasis Elimination Program of Nepal. The information incorporated in this report will serve as a historical data store during the validation of elimination of LF.

I take this opportunity to thank all the partners working in the fight against LF namely, WHO, USAID funded ENVISION project implemented by RTI International, CNTD/LSTM for their technical, financial and logistics support. My colleagues at central, regional and district health systems, Female Community Health Volunteers and other volunteers, social leaders, governmental and non-governmental organizations, media people, public and all other who have contributed in the success of this program deserved sincere thanks. Finally, I extend my sincere thanks to all those involved in preparing this report.

Thank you.

Dr. Guna Raj Lohani

Director General





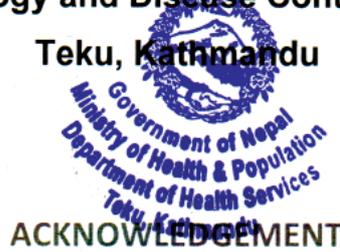
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Lymphatic filariasis (LF), commonly known as elephantiasis, is one of the mosquito borne parasitic disease with chronic irreversible consequences, mostly occurs in poor communities. In 1997, World Health Assembly passed a resolution to eliminate this disease as a public health problem by 2020. Nepal, as a member state of WHO, is also committed to eliminate LF by 2020 and has been conducting mass drug administration (MDA) since 2003, scaling up MDA to all the endemic districts in 2013 and stopping MDA in more than half of the districts by the year 2017.

EDCD is going to publish the Lymphatic Filariasis Elimination (LFE) Program's Annual report of the fiscal year 2017/2018 covering all the historical data and activities conducted and achievements made in this reporting year. The Division is very happy to publish this report which will be helpful in understanding the LFE program in Nepal from its beginning. This report will cover activities conducted, achievements made, lesson learned and issues encountered during the implementation of the LFE program in Nepal. I believe this report will help as a commendable tool to all those who are concerned with public health of Nepal and especially to those who are interested in LFE program.

I would like to express my sincere thanks to the Ministry of Health and Population, Department of Health Services for their support in one or other way. My sincere thanks goes to WHO, USAID funded ENVISION implemented by RTI international, CNTD/LSTM for their continuous technical, financial and logistics support in smooth implementation of LFE program in Nepal.

I extend my sincere thanks to all my colleagues of EDCC, regions, districts and community level health institutions (PHC/HP), NGOs/INGOs, social leaders, media personnel, public and all those who have supported in the success of LFE program directly and indirectly. Lastly, I take opportunity to thank all those who have involved in preparation of this report.

Thank you.

**Dr. Kedar Prasad Ceintury**

**Director**



## ABBREVIATION

ALB	-	Albendazole
ADLA	-	Acute dermatolymphangioadenitis
CNTD	-	Centre for Neglected Tropical Diseases
DEC	-	Diethylcarbamazine
DFID	-	Department for International Development
DHO	-	District Health Office
DoHS	-	Department of Health Services
DPHO	-	District Public Health Office
EDCD	-	Epidemiology and Disease Control Division
FCHV	-	Female Community Health Volunteer
FY	-	Fiscal Year
GPELF	-	Global Programme to Eliminate Lymphatic Filariasis
HMIS	-	Health Management Information System
HP	-	Health Post
ICT	-	Immunochromatography Card Test
IEC	-	Information, Education and Communication
INGO	-	International Non-Governmental Organization
LF	-	Lymphatic Filariasis
LSTM	-	Liverpool School of Tropical Medicine
MDA	-	Mass Drug Administration
MoHP	-	Ministry of Health and Population
NGO	-	Non-Governmental Organization
NTD	-	Neglected Tropical Diseases
PHC	-	Primary Health Care Center
Pre TAS	-	Pre Transmission Assessment Survey
RTI	-	Research Triangle Institute International
TAS	-	Transmission Assessment Survey
USAID	-	United States Agency for International Development
VDC	-	Village Development Committee
WHO	-	World Health Organization



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ABBREVIATION

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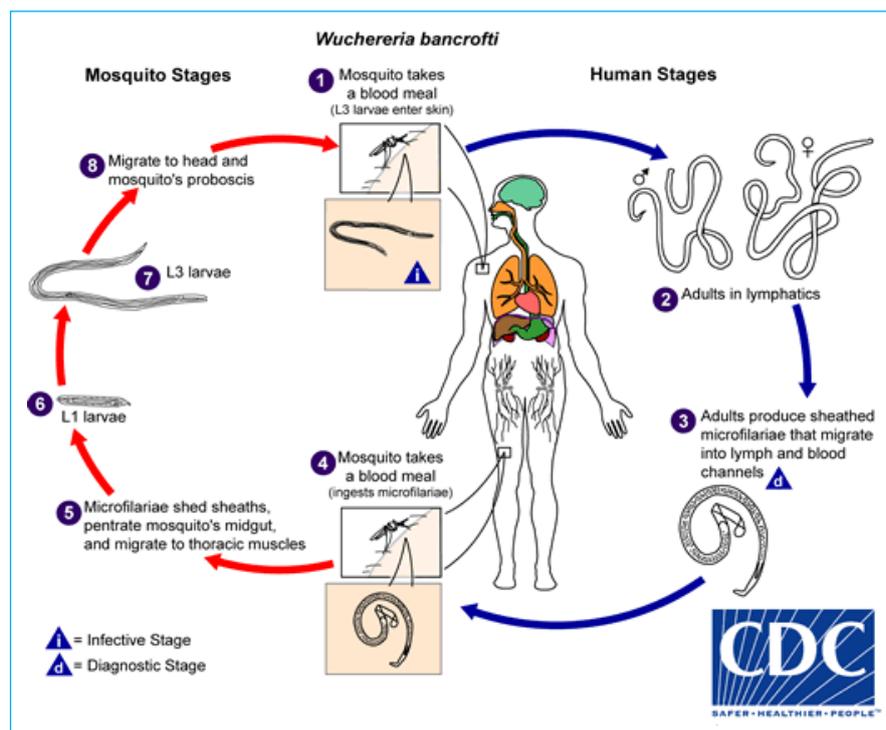


## 1.1 Lymphatic Filariasis

Lymphatic filariasis (LF), commonly known as elephantiasis, is one of the mosquito borne parasitic disease. It's a painful and highly disfiguring neglected tropical disease often associated with areas that have poor sanitation and housing quality. The infection may be acquired during childhood whereas its visible manifestations may occur later in life, causing temporary or permanent disability, pain and social stigma. The infection transmitted by different species of mosquitoes (*Culex*, *Anopheles* & *Aedes*) is caused by a thread like filarial worms (nematodes). In majority of the cases (90%), the infection is caused by *Wuchereria Bancrofti* and remainder by *Brugia Species* (*Brugia Malayi* & *Brugia Timori*).

Adult worms resides in the lymphatic vessels interrupting the normal function of the lymphatic system. The worms have life span of about 6–8 years and produce millions of microfilariae (immature larvae) that circulate in the blood. Mosquitoes are infected with microfilariae by consuming blood when biting an infected people. Microfilariae mature into infective larvae stage within the mosquito. When infected mosquitoes bite people, mature parasite larvae are deposited on the skin from where they can enter the body. The larvae then migrate to the lymphatic vessels where they develop into adult worms, thus continuing a cycle of transmission.

**Figure 1: Lifecycle of *Wuchereria Bancrofti***



(Source: CDC, 2010)

The number of infected persons, the micro filarial density in the blood of infected persons, vector mosquito's density, and characteristics of the vector and frequencies of human-vector contact are the major factors affecting transmission of LF in a community. Filarial infection can cause a variety of clinical manifestations, including lymphoedema of the limbs, genital disease (hydrocele, chylocele, and penis) and recurrent acute attacks, which are extremely painful and are accompanied by fever. The vast majority of infected people are asymptomatic, but virtually all of them have subclinical lymphatic damage. It takes years to manifest chronic and disfiguring conditions. These conditions leads to mental, social and financial losses contributing to social stigma and poverty.

## 1.2 Global burden of LF

It is estimated that 120 million people in tropical and subtropical areas of the world are infected with lymphatic filariasis; among which, almost 25 million men have genital disease (most commonly hydrocele) and almost 15 million, generally women, have lymphoedema of the leg. The majority (57%) of population requiring preventative chemotherapy live in the South-East Asia Region (9 countries) and remaining (37%) live in the African Region (35 countries). An estimation of WHO indicated that around 36 million people are living with these chronic disease manifestations globally. LF accounts for at least 2.8 million DALYs; this does not include significant co-morbidity of mental illness commonly experienced by patients and their caregivers (WHO, 2018).

Seventy one countries were listed by WHO as being endemic for lymphatic filariasis besides China and Republic of Korea which declared to have eliminated LF as a public Health Problem in 2007 and 2008 respectively. Among the endemic countries, 9 have validated elimination, 11 have completed interventions (MDA & MMDP) and are under surveillance to validate elimination whereas mass treatment is ongoing in 46 countries and 6 yet to initiate preventive chemotherapy or submit evidence that MDA is not required. Of 46 countries conducting mass treatment, 30 countries had delivered MDA in all endemic areas and are also on track to achieve elimination (WHO, 2017). Nepal is also in the tier of MDA scaled up to all endemic districts.

Figure 2: LF MDA Status of countries

MDA not started	MDA started but not at scale	MDA scaled to all endemic IUs	Post-MDA Surveillance	Elimination as a Public Health Problem
Eritrea Equatorial Guinea Gabon Sao Tome and Principe South Sudan New Caledonia	Angola Cameroon Central African Republic Chad Comoros Congo Democratic Republic Congo Ethiopia Guinea Guinea-Bissau Madagascar Nigeria Guyana Sudan Indonesia Papua New Guinea	Benin, Burkina Faso Côte d'Ivoire, Ghana Kenya, Liberia, Mali Mozambique, Niger Senegal, Sierra-Leone Tanzania, Uganda, Zambia, Zimbabwe  Dominican Republic Haiti  India, Myanmar <b>Nepal</b> , Timor-Leste  French Polynesia Fiji, FSM, Lao PDR Malaysia, Samoa Brunei Darussalam Philippines, Tuvalu	Malawi  Brazil  Egypt Yemen  Bangladesh Thailand  American Samoa Kiribati Palau Vietnam Wallis and Futuna	  Togo  Maldives Sri Lanka  Cambodia Cook Islands Marshall Islands Niue Tonga Vanuatu
6 (8%)	16 (22%)	30 (42%)	11 (15%)	9 (13%)

(Source: WHO, 2017)

## 1.3 LF burden in Nepal

Nepal was one of the 73 countries listed by WHO as being endemic for lymphatic filariasis. The disease, has been detected in different topographical areas ranging from altitude of 300 feet (in the plain terrain) to 5,800 feet (high hill areas) above sea level. Comparatively, more LF cases are seen in the terai than in the hills, but valleys and river basin areas of hilly districts have also high disease burden. In Nepal, *W. Bancrofti* is the only recorded parasite causing LF and believed to be transmitted through *Culex Quinquifasciatus* mosquito.

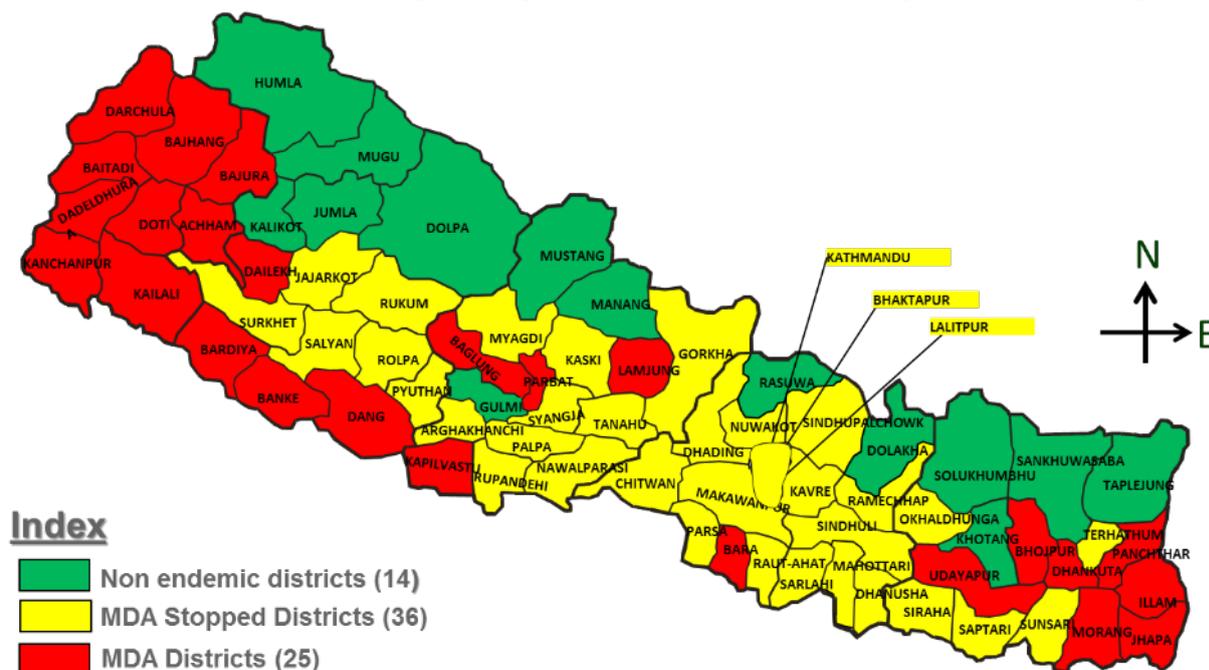
The series of LF mapping conducted between 2001- 2012 by using ICT (ImmunochromatographyTest card) revealed that the average baseline prevalence of LF in Nepal was 13 percent ranging from less than 1 percent to as high as 39 percent in the districts. Based on the ICT survey, morbidity reporting, vector density, sanitation status and geo-ecological comparability, 61 out of then 75 districts of Nepal were considered as endemic for LF posing risk to 25 million population residing in those districts. In the new federal structure, two endemic districts

namely; Rukum and Nawalparasi have been divided into each two districts. Nawalparasi has already completed TAS III in early 2018 whereas Rukum has completed TAS I in 2017. In the beginning, it was reported that more than 30,000 people were having chronic conditions of LF, majority of them believed to be hydrocele. The social and economic burden contributed by the disease is still unknown.

As of Jesth 2075 (June 2018), 14 districts are non-endemic, 36 districts had stopped LF Mass Drug Administration (MDA) after successful Transmission Assessment Survey (TAS) and 25 districts are planned for LF Mass Drug Administration (MDA) in 2019.

**Figure 3: LF Endemicity Map of Nepal**

### LF Endemicity Map as of June 2018 (Jesth-2075)



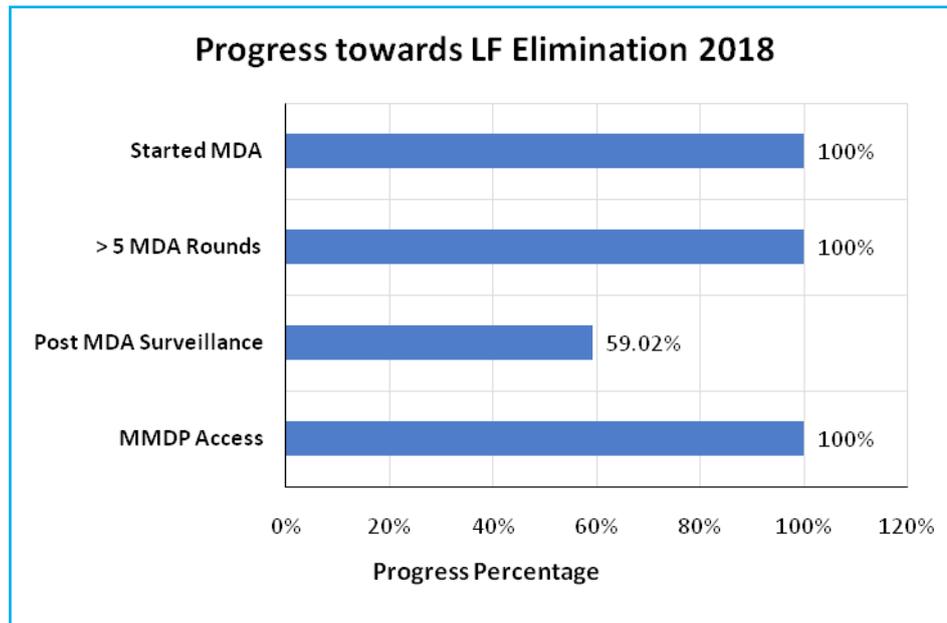
*Note: In new federal structure of Nepal, Rukum and Nawalparasi districts have been divided into each two districts making 77 districts. Rukum passed TAS I in 2017 and Nawalparasi passed TAS III in 2018. The new districts are not reflected in numbers.*

The morbidity record collected during MDA from 61 districts showed that a total of 28,529 cases of LF among which majority (19907) were hydrocele, 5,704 elephantiasis and 2,918 cases of hand & breast swelling and other LF manifestations. However, we can predict that the exact figure will be far more than this as morbidity results using SMS mapping from only 12 districts revealed that the 12,067 cases of LF have been confirmed of which 8,991 cases were hydrocele, 3,174 cases of lymphoedema and 96 cases of both.

### 1.4 Progress towards Elimination of LF in Nepal

Nepal is among the countries who have started LF MDA in all endemic districts and is on track to achieve elimination status. All 61 endemic districts have completed more than five rounds of MDA. Fifty nine percent (36) of the endemic districts have started post MDA surveillance after stopping MDA. During MDA, health workers and Female community Health Workers (FCHVs) are oriented on identification of LF cases, homebased treatment and care of LF cases, self-care by people having LF. FCHVs and Health workers in the community can manage and provide self-care instructions and support to the cases in the community. These health workers are also able to manage the acute attacks and provide other symptomatic treatments if necessary. Along with this, they are oriented on referring hydrocele cases for surgical corrections which is available on all the district/nearby tertiary hospitals free of cost. In this aspect, MMDP access is also available in all endemic districts.

*Figure 4: Progress towards LF Elimination 2018*



## Lymphatic Filariasis Elimination Programme of Nepal

### 2.1 Introduction

The World Health Assembly (WHA) of 1997 passed a resolution (50.29) to eliminate LF as a public health problem and in response to this, WHO established a Global Programme to Eliminate LF (GPELF) in 2000 with a goal to eliminate LF as public health problem by 2020.

As per global commitment for GPELF, LF mapping were done in 2001, 2005/2006 and remapping in 2012 by using ICT which discovered that 61 out of 75 districts of Nepal were endemic for LF. Almost 25 million people living in these districts are considered to be at risk of getting LF. This indicates that quite a significant number of people are estimated to be living with symptomatic and asymptomatic infections which cater as source of infection to others. Treating all potential reservoirs of infection kills the parasites (both adult and microfilaria) present in the populations which in turn reduce the sources of infection and hence, the transmission can be lowered significantly and LF can be eliminated as a public health problem.

To address this challenges, Government of Nepal has also set a goal and national targets through effective implementation of WHO recommended strategies to eliminate LF by 2020. Annual mass drug administration (MDA) of single doses of Albendazole plus Diethylcarbamazine (DEC) is implemented in endemic districts, treating the entire at-risk population. MDA should be continued for 5 years or more to fully interrupt transmission of infection. Nepal implements 6 rounds of MDA which is somewhat distinct from strategy being followed by other endemic countries where 5 rounds are taken as complete round (No any extra rounds after passing Pre TAS). The goals, objectives, targets, indicators and strategies of LF Elimination Program of Nepal are as follows:-

#### Goal

Elimination of Lymphatic Filariasis from Nepal by the year 2020 AD as a public health problem by reducing the level of the disease in population to a point where transmission no longer occurs.

#### Objectives:

- To interrupt the transmission of lymphatic Filariasis
- To reduce and prevent morbidity
- To provide de-worming benefit through the use of Albendazole to endemic communities
- To reduce mosquito vectors through application of suitable and available vector control measures (Integrated Vector Management)

#### Targets:

- To cover with MDA in all endemic districts by 2014
- To eliminate lymphatic filariasis as a public health problem by the year 2020 by reducing the microfilaria rate to below 1 percent (OR Antigenemia less than 2 %).

#### Indicators

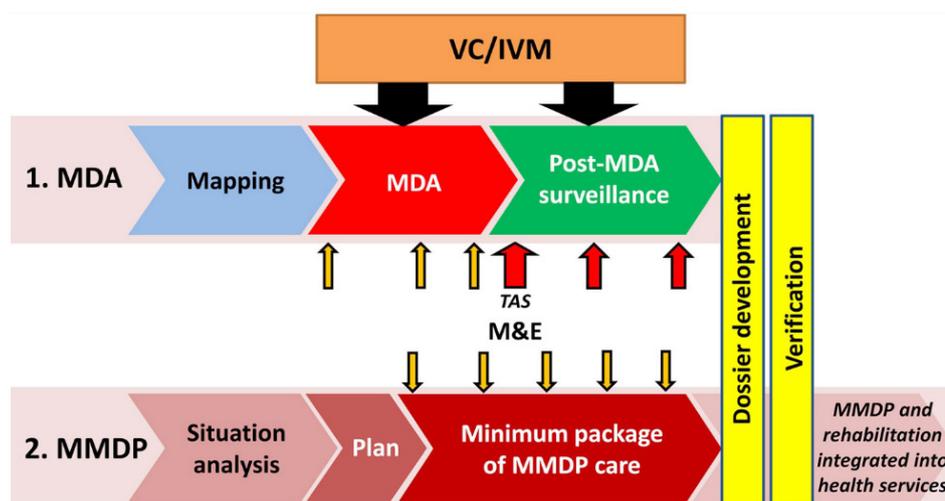
- Prevalence of disease is the primary indicator to be used for identification and stratification of endemic areas.
- Prevalence of infection is the secondary indicator which can be used for identification of endemic areas.
- Coverage of distribution of drug and compliance of intake are important indicators for process evaluation.

## Strategies

- **Interruption of transmission by Mass Drug Administration (MDA)** - Using two drug regimens, Diethylcarbamazine (DEC) and Albendazole, yearly campaign for six years.
- **Morbidity management and Disability Prevention (MMDP)** – Morbidity management by self-care and with support using intensive but simple, effective and local hygiene techniques.

Figure 5: LF Elimination Strategies and Steps

## LF Elimination Strategies & Steps



(Source: WHO; 2017)

## 2.2 Baseline and Mapping Survey

Baseline surveys are conducted before implementing MDA in the districts to explore the geographical distribution of the disease. These surveys determine the prevalence of the disease through examining blood for microfilariae or antigenemia in two sentinel sites each in a district. Nepal conducted LF mapping in 2001, 2005/2006 and remapping in 2012 by using ICT. These surveys revealed that the average baseline prevalence of LF infection in the country was 13 percent ranging from less than 1% to as high as 39% in the districts. The clinical cases of LF was being reported during outpatient attendance in health institutions (Central, Regional, Zonal and District hospitals; and Primary Health Care Centers (PHCs), Health Posts (HPs) at periphery) through the Health Management Information system (HMIS), but it is widely estimated that the reporting of LF related morbidity in HMIS is under reported since the private sector does not report regularly to the government authorities. Based on the ICT surveys, morbidity reporting (number of clinical cases), and vector density, sanitation status of the districts and geo-ecological comparability (Endemicity of surrounding districts), 61 out of 75 districts of Nepal were considered as endemic for LF. The district wise results and details of baseline and mapping are given in Annex 2 and 3.

## 2.3 Mass Drug Administration (MDA)

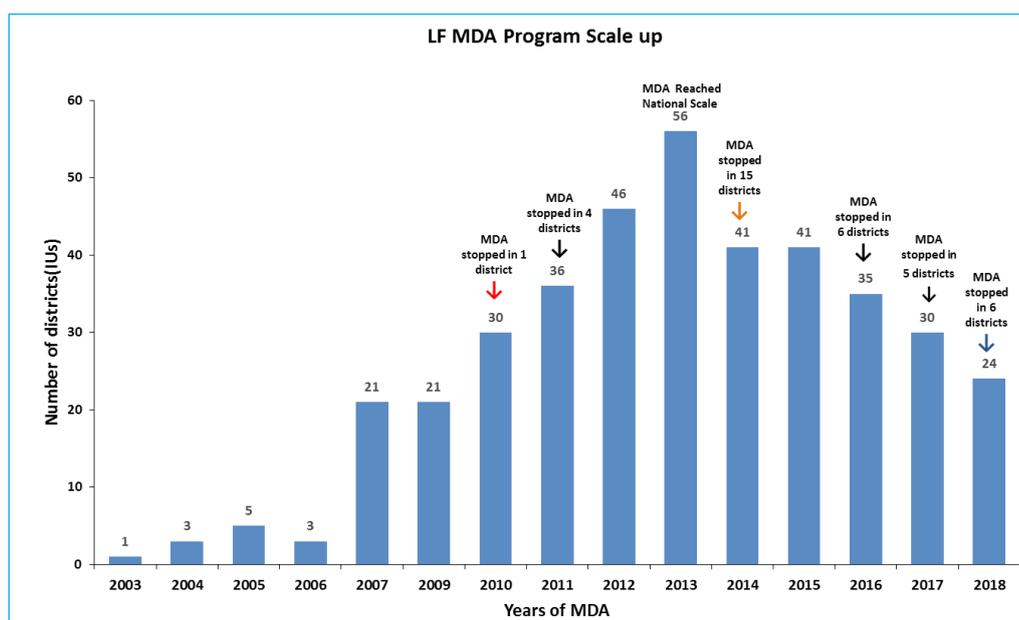
Annual mass drug administration (MDA) of single doses of Albendazole plus Diethylcarbamazine (DEC) is being implemented in all endemic districts, treating the entire at-risk population. MDA is being continued for 6 years to reduce the density of microfilariae circulating in the blood of infected individuals to levels that will prevent mosquito vectors from transmitting infection. The other objective of MDA is to reduce the prevalence of the

infection in the entire community. The MDA should have greater than 65 percent epidemiological coverage (proportion of individuals treated in a district) at each rounds. The MDA can be stopped in an implementation unit (district) after passing TAS I (Stop MDA TAS).

## LF MDA Program Scale up

LF Elimination program has made significant progress since it first launched Mass Drug Administration (MDA) with Diethylcarbamazine and Albendazole from one endemic district in 2003, achieving cent percent (all 61 endemic districts) geographical coverage in 2013. In the initial stage, the program scale up was quite slow with little ups and downs till 2006. The massive LF MDA program scale up started in 2007 which progressively reached to all the 61 endemic districts in 2013. The districts are gradually stopping MDA after successful completion of Stop MDA TAS (TAS I). As of June 2018, MDA has been stopped in 37 districts. But unfortunately, Bara district failed TAS II in 2017 where re MDA is due to start in 2019. Thus, at this point only 36 districts are considered for stopped MDA. Additional, 10 districts are awaiting for Stop MDA TAS after passing Pre TAS in 2017 and decision to stop or continue MDA in these 10 districts will be taken based on the findings of the Stop MDA TAS scheduled for August-September 2018 (2075). Similarly, Stop MDA TAS is planned in 10 districts in 2019, 4 districts in 2020 and one district in 2021. All the 61 endemic districts will stop MDA by 2021 if the planned TAS passed successfully.

**Figure 6: LF MDA Program Scale Up**



## History of LF MDA and its current status

Almost 110 million doses of DEC & Albendazole have been administered to at risk populations of 61 districts since, Nepal started its first LF MDA from Parsa district in 2003. It is then gradually scaled up to 2 more districts (Makwanpur and Chitwan) in 2004 and further extending to 2 more districts (Rupandehi and Nawalparasi) in 2005. Parsa completed 6 rounds of MDA in 2009 whereas other 4 districts completed 5 rounds of MDA in 2010 and MDA stopped in 2011 following WHO guidelines. Similarly, Nepal scaled up MDA to 21 districts in 2007, starting MDA in 16 more districts (Rautahat, Bara, Kapilvastu, Sarlahi, Dhanusha, Mahottari, Dhading, Nuwakot, Kavre, Sindhupalchowk, Ramechhap, Sindhuli, Palpa, Tanahun, Syangja, and Gorkha). After completion of 6 rounds of MDA in 2013, MDA in 15 of those districts had stopped except Kapilbastu which failed TAS I. MDA is being continued in Kapilbastu and has completed 10<sup>th</sup> rounds of MDA in 2018. Similarly, having stopped MDA for more than 2 years, Bara failed TAS II in 2017 and is starting re-MDA from 2019.

In 2010, Nepal extended LF MDA program to 10 more districts (Kathmandu, Lalitpur, Bhaktapur, Lamjung, Kaski,

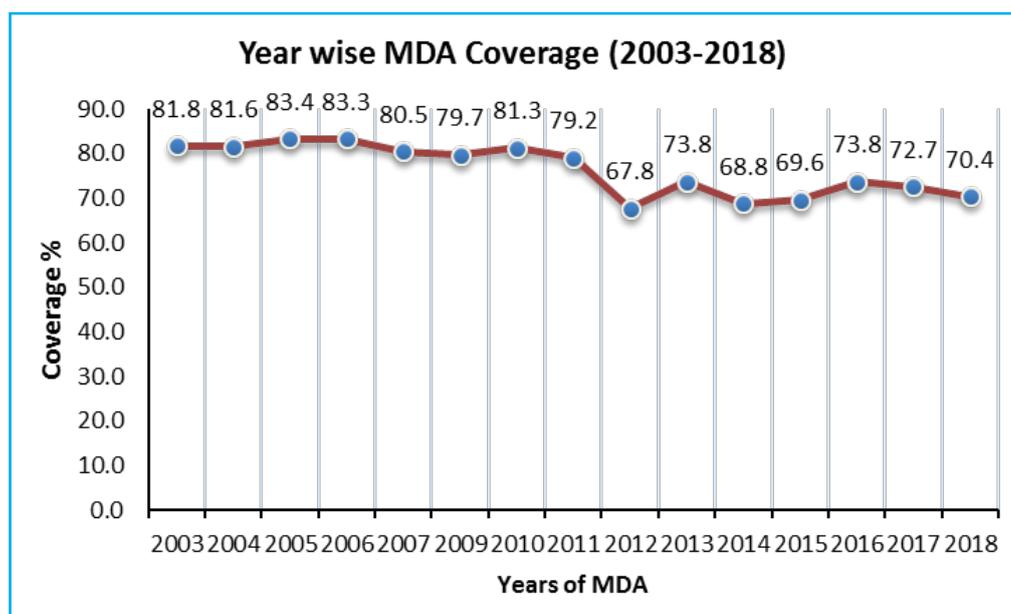
Parbat, Baglung, Myagdi, Pyuthan and Arghakhanchi) covering 31 of the 61 endemic districts. Among them, Kathmandu (Rural & Urban), Lalitpur Urban, Bhaktapur, Kaski, Pyuthan and Arghakhanchi stopped MDA after 6 rounds of MDA following successful Stop MDA TAS in 2015. Similarly, Lalitpur Rural and Myagdi completed 8 rounds of MDA and stopped in 2017. However, 3 districts (Lamjung, Parbat and Baglung) are still ongoing with 9<sup>th</sup> rounds of MDA in 2018 and will stop MDA after 2019 MDA if TAS I passed.

In order to gear up LF MDA program to reach all endemic districts by 2013, Nepal scaled up the program to 10 more districts (Bhojpur, Udayapur, Saptari, Siraha, Okhaldhunga, Dang, Rolpa, Rukum, Salyan, and Banke) in 2011. Among them, 6 districts (Saptari, Siraha, Okhaldhunga, Rolpa, Rukum & Salyan) stopped MDA after 6<sup>th</sup> rounds in 2017 whereas other 4 districts have completed 8<sup>th</sup> rounds in 2018. Two districts (Bhojpur, Udayapur) are awaiting TAS I in 2018 and stop MDA if they passed.

The LF MDA program scale up continued in 2012, adding 10 more endemic districts (Dhankuta, Illam, Jhapa, Morang, Panchthar, Sunsari, Tehrathum, Bardiya, Surkhet and Jajarkot). Among them 4 districts (Sunsari, Tehrathum, Surkhet and Jajarkot) completed 6<sup>th</sup> rounds of MDA and stopped MDA in 2018 whereas other 6 districts completed 7<sup>th</sup> rounds and will stop MDA in 2019 if they pass scheduled TAS.

The LF MDA program reached to all endemic districts in 2013 after final scale up in 10 endemic districts (Dailekh, Achham, Bajura, Doti, Dadeldhura, Kailali, Kanchanpur, Baitadi, Bajhang and Darchula). All these districts have completed 6<sup>th</sup> rounds of MDA. Eight of these 10 districts are awaiting stop MDA TAS in late 2018 and will stop MDA if planned survey succeeded. Kailali and Kanchanpur will stop MDA in 2021 if passed planned TAS in 2020. The details of the district wise MDA coverage over the years are given in the annex 5.

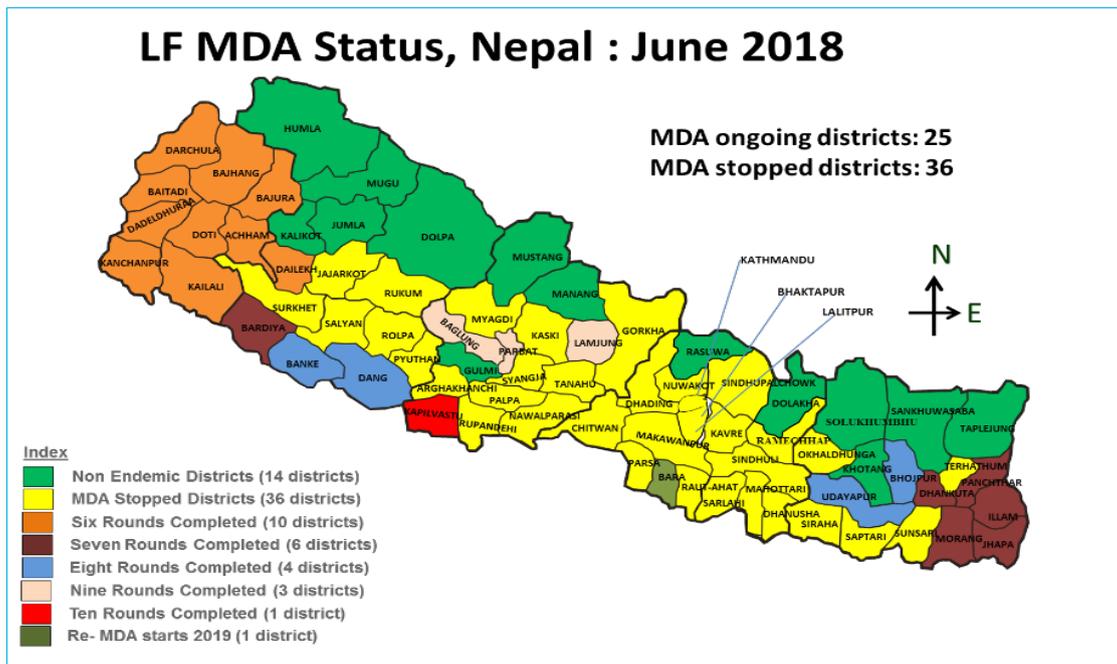
**Figure 7: Year wise MDA Coverage (2003-2018)**



The above figure shows the National LF MDA Coverage among total population from 2003 to 2018. The overall National LF MDA coverage in the last five years is stable around 70 percent. The deep fall in the coverage in 2012 was due to the shift in strategy from distributing drugs to direct observation treatment. Also, Serious Adverse Events (SAEs) in some of the districts had hardly hit the coverage that year.

As of June 2018, 25 districts are ongoing LF MDA of different rounds (Bara is due to start re MDA in 2019 after failing TAS II). However, 36 districts (59% of the endemic districts) have stopped MDA after successful TAS I. The LF MDA status of different districts are shown in the map below:

Figure 8: LF MDA Status of Nepal, as of June 2018

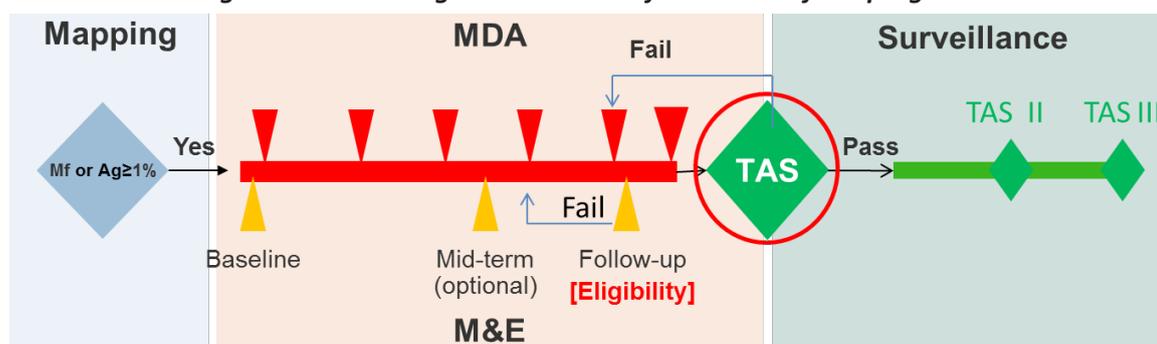


Note: In new federal structure of Nepal, Rukum and Nawalparasi districts have been divided into each two districts making 77 districts. Rukum passed TAS I in 2017 and Nawalparasi passed TAS III in 2018. The new districts are not reflected in numbers.

## 2.4 Monitoring and Evaluation during and after LF MDA

Mass drug administration (MDA) is needed to reduce infection in the community to levels below a threshold at which mosquitoes are unable to continue spreading the parasites from person to person and new infections are prevented. Coverage are monitored at each MDA round to determine whether the goal of at least 65 % coverage of the total population was met. Epidemiology and Disease Control Division conducts post MDA Coverage Survey, Pre Transmission Assessment Survey and Transmission Assessment Survey (I, II & III) to monitor Lymphatic Filariasis Elimination (LFE) activities using WHO guidelines for monitoring of the program. All these surveillance activities are being supported by USAID funded ENVISION project implemented by RTI International. After at least five rounds of effective MDA, the impact is evaluated at sentinel and spot-check sites. WHO recommends the transmission assessment survey (TAS) to determine when infections have been reduced below these target thresholds and MDA can stop. TAS I is conducted if all the eligibility criteria are met. Once MDA has stopped, Post-MDA Surveillance (TAS) in the same modality, is used as a surveillance tool to determine that infection levels are sustained below the thresholds. TAS is repeated twice at the interval of 2-3 years during post-MDA surveillance phase. The pictorial illustration of Monitoring and Evaluation activities conducted in LF MDA program is given below:

Figure 9: Monitoring and Evaluation framework of LFE program



(Source: WHO; 2017)

As part of program monitoring and evaluation, LFE program has set the Ethical review and consent requirements for the monitoring of program activities, which are as follows:

1. Ethical Review: Nepal follows WHO guidelines and recommendation in implementation of LFE program activities and monitoring of program results. Therefore, Ethical Review and approval from NHRC is not required.
2. Consent: In case of school based TAS, parents, or guardians are informed through students, teachers, representatives of parents and school management committee about the survey prior to the survey. Survey will be conducted in presence of parents, guardians, teachers and members of school management committee present on that day. Samples should not be taken from child who is not willing to participate in the survey.

## Post MDA coverage survey

Post MDA coverage surveys are population based surveys conducted by LF elimination programs to validate reported coverage rates of MDA, identify reasons for non-compliance, detecting problems with the drug supply chain and distribution systems, measuring coverage in specific population effectiveness of education, information and communication strategies, to improve program implementation performance for future MDAs. Altogether, 7 episodes (2007, 2009, 2011, 2012, 2013, 2014 and 2017) of coverage surveys were done following established survey guidelines. All these surveys have validated the reported coverage rates. The major reason identified for non-compliance of MDA was fear of side effects in all the surveys. The other reasons for non-compliance were absent from home, unknown about the benefit of drug, not felt the need of drug, no participation due to exclusion criteria (less than 2 years, severely ill and pregnancy).

## Pre Transmission Assessment Survey (Pre-TAS)

Pre-TAS is a type of follow up survey which is undertaken after completing five rounds of MDA or a year before conducting TAS. The main objective of this survey is to measure the effectiveness of the MDAs and to identify if the districts will qualify for transmission assessment survey (TAS) which is done after six effective MDA rounds. At least one sentinel site and one spot-check site having a population of at least 500 is identified for each district. Three hundred individuals over 5 years of age is examined from each sentinel site and spot-check site. The sentinel sites are pre-designated by program and the spot-check site are selected based on proximity, demographic similarities with sentinel site and recommendation by District (Public) Health Office. In order to pass the survey, each site should have prevalence of antigenemia below 2 percent.

The districts (Parsa, Makwanpur, Chitwan, Nawalparasi and Rupandehi) which have completed 5 rounds of MDA for the first time conducted TAS I without conducting Pre TAS following then WHO guidelines. LF Elimination Program of Nepal conducted its first ever Pre TAS survey in 16 districts by performing microscopy for microfilaria whereas all other Pre TAS surveys are being conducted by using immunochromatography card test (ICT) or Filariasis Test Strip (FTS) for detection of antigenemia. The information about the sentinel and spot check sites of previous surveys are given in annex 4. The results of Pre TAS are as follows:-

**Table 1: Results of Pre-TAS**

S. No.	PRE TAS/Re Pre TAS/Pre Re TAS	MF/Ag	Name of Passed Districts/EU	Name of Failed districts/EU
1	Pre TAS in 16 districts (2012)	Mf	Dhading, Nuwakot, Kapilvastu, Dhanusha, Sarlahi, Mahottari, Rautahat, Bara, Palpa, Syangja, Tanahun, Gorkha, Sindhupalchowk, Kavrepalanchowk, Ramechhap, Sindhuli	NA
2	Pre TAS in 10 districts (2014)	Ag	Kathmandu (Urban and Rural), Lalitpur Urban, Bhaktapur, Kaski, Arghakhanchi, Pyuthan	Parbat, Myagdi, Baglung, Lamjung, Lalitpur Rural
3	Pre TAS in Kapilvastu (2015)	Ag	NA	Kapilvastu
4	Pre TAS in 10 districts (2015)	Ag	Rukum, Rolpa, Salyan, Saptari, Siraha, Okhaldhunga	Bhojpur, Udaypur, Banke, Dang
5	Pre TAS in 15 districts (2016)	Ag	Terathum, Sunsari, Lalitpur rural, Myagdi, Surkhet, Jajarkot	Ilam, Jhapa, Panchthar, Dhankuta, Morang, Bardiya, Parbat, Lamjung, Baglung
6	Pre TAS in 14 districts (2017)	Ag	Achham, Baitadi, Bajura, Bajhang, Doti, Darchula, Dadeldhura, Dailekh, Bhojpur, Udaypur	Banke, Dang, Kailali, Kanchanpur
<b>Total</b>	<b>68 episodes of Pre TAS in 56 districts</b>		<b>45/68 (66 % passed)</b>	<b>23/68 (24% failed)</b>

The further details of Pre TAS results are given in annex 7.

## Transmission Assessment Survey (TAS)

### A. Stop MDA TAS (TAS I)

Transmission assessment surveys are conducted to detect whether the transmission of LF has been effectively stopped or not. This survey also points out the effectiveness of MDAs after recommended six rounds. The findings of this survey will help to decide whether to stop MDA or not in the given IUs/EUs. This survey was done by using ICT cards previously but now Filariasis Test Strips (FTS) are being used. In this survey, children of 6 -7 years old or children studying in grades 1 & 2 are tested using rapid test kit and the survey evaluates the new transmission of LF in new population. EDCD has been conducting these surveys following WHO TAS guideline. This guideline suggests to conduct school based TAS surveys if the school enrollment rate is greater than 75 percent, on this basis all these surveys in Nepal are being conducted in school.

### B. Post MDA surveillance (TAS II & TAS III)

The success and sustainability of LFE program depends on careful monitoring after MDA has stopped to ensure that transmission is not re-emerging. Thus, Surveillance in post MDA phase is a key programmatic step in LF elimination. It is an essential monitoring and surveillance tool to detect recrudescence of LF in MDA stopped districts as well as in districts classified or mapped earlier as non-endemic. Surveillance functions as a basis for the verification of absence or low transmission of LF. This will monitor the effectiveness of the MDAs and the reintroduction of LF infection in eliminated areas or the areas identified earlier as non-endemic. This follows the particular methodology as that of Stop MDA TAS (TAS I). Post MDA surveillance (TAS II & III) is repeated twice, first (TAS II), 2-3 years after stopping MDA and second (TAS III), 2-3 years after first (TAS II). Besides these surveys, Night blood collection and testing in hospitals of MDA stopped districts are ongoing as part of post MDA surveillance. The results of TAS (I, II, III) are given below.

**Table 2: Results of TAS (TAS I, TAS II, TAS III)**

S.No.	TAS	Name of Passed Districts/EU	Name of Failed districts/EU
1	TAS 1 in 5 districts (2011)	EU 1- Parsa, Makwanpur, Chitwan; EU 2 - Nawalparasi, Rupandehi	
3	TAS 1 in 16 districts (2013)	EU 3 - Dhading, Nuwakot, Kavre; EU 4 - Dhanusha, Mahottari, Sindhuli; EU 5 - Sarlahi, Rautahat; EU 6 - Bara; EU 7 - Palpa, Syangja, Tanahun, Gorkha; EU 8 - Sindhupalchowk, Ramechhap	EU 9 - Kapilvastu
5	TAS 2 in 5 districts (2014)	EU 1- Parsa, Makwanpur, Chitwan; EU 2 - Nawalparasi, Rupandehi	
7	TAS 1 in 6 districts (2016)	EU 10 -Kathmandu Rural; EU 11 - Kathmandu Urban; EU 12 - Lalitpur Urban; EU 13 - Bhaktapur; EU 14 - Kaski; EU 15 - Arghakhanchi, Pyuthan	
9	TAS 1 in 6 districts (2016)	EU 16 -Okhaldhunga; EU 17 - Saptari; EU 18 - Siraha; EU19 - Rukum, Rolpa, Salyan	
10	TAS 2 in 15 districts (2016)	EU 3 - Dhading, Nuwakot, Kavre; EU 4 - Dhanusha, Mahottari, Sindhuli; EU 5 - Sarlahi, Rautahat; EU 7 - Palpa, Syangja, Tanahun, Gorkha; EU 8 - Sindhupalchowk, Ramechhap	EU 6 - Bara
13	TAS 1 in 6 districts (2017)	EU 20 - Terathum; EU 21 - Sunsari; EU 22 - Lalitpur Rural; EU 23 - Surkhet, Jajarkot; EU 24 - Myagdi	
14	TAS 3 in 5 districts (2018)	EU 1- Parsa, Makwanpur, Chitwan; EU 2 - Nawalparasi, Rupandehi	
<b>Total</b>			
<b>TAS I</b>	<b>38 districts (24 EUs)</b>	<b>37 districts (23 EUs)</b>	<b>1 districts (1 EU)</b>
<b>TASII</b>	<b>20 districts (8 EUs)</b>	<b>19 districts (7 EUs)</b>	<b>1 districts (1 EU)</b>
<b>TAS III</b>	<b>5 districts (2 EUs)</b>	<b>5 districts (2 EUs)</b>	<b>NA</b>

The further details of TAS results are given in annex 7.

## 2.5 Morbidity Mapping and Disability Prevention (MMDP)

Morbidity mapping and disability prevention is other pillar of LFE program besides MDA. During MDA, health workers and Female community Health Workers (FCHVs) are oriented on identification of LF cases, homebased treatment and care of LF cases, self-care by people having LF. They collect the report of morbidity cases in the community. FCHVs and Health workers in the community can manage and provide self-care instructions and support to the cases in the community. These health workers are also able to manage the acute attacks and provide other symptomatic treatments if necessary. Along with this, they are oriented on referring hydrocele cases for surgical corrections which is available on all the district/nearby tertiary hospitals free of cost. In this aspect, MMDP access is also available in all the endemic districts. EDCD and LSTM are funding for the free hydrocele surgeries in the district. Besides these, community level lymphoedema self-care orientation has been conducted in some of the districts. As part of MMDP program, MMDP short orientation has been conducted in 2 big tertiary hospitals (PAHS & BPKIHS). LFE program is continuously focusing on integration of leprosy and LF self-care in few hospitals. Though, this integration so far has been happened in only one hospital i.e. in Lalagadh hospital (covering Dhanusha, Mahottari, Sindhuli, Sarlahi districts)

In support of LSTM, EDCD is also conducting MMDP mapping using MeasureSMS reporting in the endemic districts. At first, two health workers from each Health facilities of these districts are invited to one day training on “Lymphedema management and SMS reporting for MMDP mapping”. This will trained them about clinical aspects of LF, Lymphoedema self-care, on conducting MMDP SMS mapping survey and recording and reporting the survey. Later, these trained health workers will conduct community training for the FCHVs in their respective communities to identify patients in their catchment areas and to provide basis advice to the patients on management of their condition. The FCHVs were then mobilized and engaged in community level to identify patient in their catchment areas and report to the Health workers. HWs then visit those suspected cases and confirm further and report to the concern authority.

In 2016, two districts (Dhading & Kanchanpur) were piloted for Measure SMS, in which MMDP patient searching and reporting was conducted. In 2017, SMS mapping was conducted in two more districts (Saptari and Okhaldhunga). Now, in 2018, 8 more districts were scaled up and the MMDP SMS mapping survey is completed in 12 of 61 endemic districts. EDCD is planning to expand this program rapidly in other endemic districts. The results of morbidity mapping from 12 districts are as follows:

**Table 5 : Morbidity Mapping Results from SMS Survey**

S N	Districts	Lymphoedema	Hydrocele	Both*	Total
1	Dhading	863	1392	28	2227
2	Kanchanpur	725	2901	15	3611
3	Okhaldhunga	41	86	1	126
4	Saptari	420	1172	15	1577
5	Panchthar	59	137	3	193
6	Nawalparasi	155	341	5	491
7	Bara	195	692	7	880
8	Gorkha	38	171	1	208
9	Lamjung	45	174	2	217
10	Palpa	133	202	3	332
11	Baitadi	62	63	2	123
12	Dang	438	1660	16	2082
<b>Total</b>		<b>3174</b>	<b>8991</b>	<b>96</b>	<b>12067</b>

*\*All LF cases are already counted in both(each hydrocele and Lymphoedema) so subtracting one both from sum of Lymphoedema and Hydrocele gives us total number of LF cases.*

# Activities conducted in LFE program - 2017/2018 (2074/75)

### 3.1 Revision of Guideline and Training manuals

As part of preparation of MDA 2018, the LF guideline was updated with the existing context. The feedbacks from the districts noted during previous year's review meetings, suggestions from stakeholders, essential policy changes and required amendments were incorporated in the guidelines and training manuals. These guidelines and training manuals were published and sent to the districts before MDA. Based on these guidelines and training manuals district public health/health offices conducted LF MDA and MMDP activities in the district.

### 3.2 MDA planning and Review meetings

#### MDA Planning meetings

LFE Regional planning meetings were held in four different regions namely: Eastern Development Region, Western Development Region, Mid-Western Development region and Far Western Development Region. Meetings were conducted by the Regional Health Directorate with the support from EDCD. RTI ENVISION provided logistics and technical support in those meetings. All four meetings went well with enormous discussions on experiences of the last MDA, challenges faced and lesson learned. The participants included District Public Health/Health Officers, District LF focal persons, superintendents of zonal & regional hospitals, representatives from Hospitals & medical colleges, medical officers, and Regional Health Directorate officials.

The major presentations and discussions done in the meeting were:

- Lymphatic Filariasis: Clinical aspects in brief
- Effective communication including risk communication & coordination during MDA campaigns
- MDA Program implementation guidelines and budget review
- Adverse Events following MDA and their management with special focus on SAEs identification
- Update on national progress towards LF elimination.
- Sharing: lesson learned during previous MDA campaign/Planning
- Morbidity management and disability prevention.
- Steps, methods and update on post-MDA surveillance.
- District presentation sharing experiences and challenges during MDA.
- Experience and challenges in conducting MMDP/Hydrocele surgery.

All the presentations were focused on making effective MDA round of 2018. All the issues raised by the participants were resolved through discussion by region and EDCD. The participants were asked to give special attention on reporting the adverse event's cases as adverse events were also mis-reported as SAEs in the past. The suggestions were seek and provided to improve MDA coverage and program improvement in coming round.

All the MDA districts later organized a one day district level planning meetings inviting health workers of the districts to plan for the LF MDA 2018.

#### MDA Review Meetings

LFE Review Meetings were conducted in two regions; Mid-Western and Far Western region. All the districts have presented the Strengths, Weakness, Opportunities and Threats in conducting MDA Round of 2018. All the issues raised by the participants were discussed, lessons learned were shared, budgetary and other management issues were resolved by regional and EDCD personnel. One of the important issues raised in the districts was arrival of late drugs and logistics and EDCD replied to make it as fast as possible in the coming

year. The best practices of additional social mobilization activities in Banke and Bardiya districts were praised by everyone and ask for similar interventions in some of the problematic districts

**The major weakness raised was:**

- Delayed supply of logistics (MDA medicine & manuals) and regional planning meetings
- Insufficient budget for supervision and media mobilization

**The major Strengths discussed:**

- Focused MDA activities
- Involvement of health workers in urban areas
- Good media management

The Mid Western and Far Western Region have conducted this LF MDA Review meeting in Dhangadhi with the support from EDCD. RTI-ENVISION provided logistic and technical support for this meeting.

### 3.3 LF MDA Campaign

The LF MDA campaign of 2018 was conducted in 24 districts (see table below) from 24<sup>th</sup> February 2018 to 26<sup>th</sup> February 2018. Among the 24 districts, MDA in 13 districts were funded by Ministry of Health and Population and 11 districts were fully supported by USAID funded ENVISION project implemented by RTI International. The district level activities conducted were district level planning meetings, coordination meetings, health volunteers’ orientation, social mobilization meetings, media orientations etc. The medicines were administered to eligible populations through a 3 day campaign. The first day was assigned for booth based campaign and two more days for mop up with house to house visit approach. MDA booths were positioned in an accessible place for every villages. Eligible populations that do not come to booths for medication were covered during the second and the third day of the campaign by conducting a house-to-house visit. Before giving medicines, these eligible populations were screened by asking questions of contra-indications. The eligible populations were asked to swallow the medicines in front of the health worker or volunteer. The local health facilities will continue to provide the medicines for those who missed for any reason or were ill during the campaign period. Altogether, 8,557 health workers and 44,524 volunteers were mobilized in the MDA campaign of 2018.

The volunteers were well trained before the campaign and the populations were made aware of the benefits of the MDA and also of some possible adverse events/side effects that may arise after taking the medicines. Every health facilities have managed the emergency drugs for possible serious adverse events. The rapid response teams were prepared with necessary logistics for responding any adverse events from national to the health facility level. The adverse events cases were managed locally if possible through counseling and treatment. The serious adverse events, were referred and taken to the nearest hospitals or higher centers by the rapid response team. So far, no serious adverse events have been reported this year.

**Table 3: 2018 LF MDA Districts and Details**

S.No	Districts	Total Population	Total treated	Coverage	MDA Cycle
1	Kapilbastu	642475	460253	71.64%	10th
2	Parbat	148267	108092	72.90%	9th
3	Baglung	279979	224263	80.10%	9th
4	Lamjung	171105	113886	66.56%	9th
5	Banke	574936	378835	65.89%	8th
6	Bhojpur	163711	120021	73.31%	8th
7	Dang	622571	449184	72.15%	8th
8	Udayapur	345889	216810	62.68%	8th

9	Dhankuta	154677	101913	65.89%	7th
10	Illam	306381	243987	79.64%	7th
11	Jhapa	895419	584837	65.31%	7th
12	Morang	1058985	630542	59.54%	7th
13	Panchthar	182676	118442	64.84%	7th
14	Bardiya	465746	341698	73.37%	7th
15	Dailekh	288013	225894	78.43%	6th
16	Achham	279752	207699	74.24%	6th
17	Baitadi	262525	200174	76.25%	6th
18	Bajhang	214795	159506	74.26%	6th
19	Bajura	149938	119361	79.61%	6th
20	Dadeldhura	154136	117041	75.93%	6th
21	Darchula	141606	108692	76.76%	6th
22	Doti	213597	174550	81.72%	6th
23	Kailali	901177	627410	69.62%	6th
24	Kanchanpur	508150	391242	76.99%	6th
<b>Total</b>		<b>9,126,506</b>	<b>6,424,332</b>	<b>70.39%</b>	

### **Logistics Management**

LF elimination programme of Nepal uses combination of Diethylcarbamazine (DEC) and Albendazole for LF MDA campaign. DEC is procured by government of Nepal while Albendazole is provided as donation from GlaxoSmithKline (GSK) through WHO. Before distribution to the districts, both the medicines undergo quality assurance test. These medicines were directed to the districts by Logistics Management Division in coordination with EDCD which are further dispatched to the community through districts. The supply of logistics was not timely due to the late arrival of DEC in the central warehouse; and no stock out of the medicines was reported from the local level. The logistics including guidelines, registers, were also sent to the districts from the center. There were issues of late supply of these logistics in some of the districts. The other logistics like recording and reporting forms, posters, disease recognition cards, bags and street banners were made by the districts at local level.

### **Coordination, Advocacy and Social Mobilization**

The interaction meetings and awareness raising activities for the inter-sectoral coordination and advocacy of the LF MDA program were conducted in the districts, municipalities, and wards of the municipalities involving varied sectors of the community. The purpose of these interaction meetings were to inform them about the LFE MDA program and aware about the benefits of taking medications and possible adverse events as well as provide response to their curiosities about the program and side effects of drugs. These activities were conducted prior to LF MDA campaign.

Journalist interaction was one of the major activities conducted for the coordination and advocacy of LF MDA. The journalist interaction was conducted at the central level in EDCD and in DPHO/DHO of each MDA districts.

In order to aware the community about LF MDA, miking was done in community level with messages and dates of LF MDA, advertisement was published in local and national newspapers, banners with information of MDA campaign has been prepared and displayed locally, in places where movement of population is high and a large number of people can see these messages. Along with this, broadcast of LF MDA awareness messages in local level radio, FM and televisions were done effectively in all the districts. . IEC materials like posters, pamphlets/ brochures, banners and disease recognition cards were produced and distributed in all the districts.

Interpersonal communication (IPC) through female community health volunteers, and health workers and other volunteers, were done to inform about LF MDA. Banke and Bardiya districts conducted extensive social mobilization activities with the support from RTI ENVISION. In those districts, interactions with community, civil society members, students, and school teachers, religious and social leaders were done with extra efforts. The video was made showing LF disease, its hardship and importance of LF MDA drugs featuring local leaders, doctors and well known person of the area. The video demonstration and extensive media campaigns helped in social mobilization in Banke and Bardiya districts. The lessons learned from these districts will be promoted in other districts.

MDA was launched in the districts and peripheral level by organizing various functions in their respective district headquarters and health facilities. These inaugural functions were widely covered in national level/district level print and electronic media.

### **School Health Education Program**

School Health Education Program was conducted by the districts and local health facilities in schools and colleges of their respective districts in order to aware the students about LF MDA. These activities were conducted prior to MDA and conducted year round in some of the districts. These activities inform students on LF MDA dates, LF disease, why MDA is needed, which drugs are used, benefits of these drugs, correct doses, and possible side effects of these drugs.

### **Data collection/update**

Population data is updated at local level by health workers/ volunteers by visiting house to house in their respective areas. Information on name, age/sex, eligible people for medicine, morbid cases (elephantiasis/lymphoedema, hydrocele/urogenital swelling) are collected and recorded in a provided register. In the meantime, the health workers/volunteers take this opportunity to inform people on various aspects of MDA - its importance, date of the campaign, from where/how to get the medicines, information on morbidity management and may answer or refer for any other issues related to LF and MDA. During the MDA 2018, 6,838 LF related/suspected morbidity cases were reported from 24 districts.

### **MDA supervision and monitoring**

MDA supervision and monitoring were done from various levels using recommended checklists. At implementation level, health facilities were the main authorities responsible for supervision and monitoring of the activities in their respective areas. Similarly, the district (public) health offices were responsible for monitoring and supervision of the activities in their districts. Regional health directorates, Epidemiology and Disease Control Division, Department of Health Services, RTI ENVISION and WHO also have played vital roles in supervising and monitoring overall campaign preparations, implementation of campaign and occurrence of adverse events. Central hospitals, private hospitals, medical colleges teaching hospitals, regional, sub-regional, zonal and district hospitals were informed of and oriented on management of severe adverse events following MDA during the planning meetings. The center, especially the EDCD, closely monitored and supported the districts in managing adverse events.

## **Major monitoring findings**

### **Strengths:**

1. Logistics, including medicines, were adequate
2. Despite short period & late disbursement of fund from center, implementation units/districts managed to conduct all preparatory activities-trainings, orientations, logistics management, advocacy/IEC activities etc. in time.

#### Weaknesses:

1. Poor quality trainings and orientation due to short preparation period in community level,
2. Fear of possible side effects and rumors of past were the major reasons of noncompliance to drugs,
3. Some of the health workers and volunteers have distributed the drugs besides strict instructions of directly observed treatment
4. Drugs and other logistics were not supplied timely in some districts

### 3.4 LF Expert meeting

LF Expert meeting was held in Kathmandu from 12-13<sup>th</sup> March 2018 with the technical and financial support from WHO Nepal. Team of WHO experts facilitated the program with their technical expertise. DPHO/DHOs and LF focal person from the challenging 15 districts, individual experts in Nepal were the key participants of the meeting. MoHP, DoHS, EDCD, RTI ENVISION, and WHO Nepal actively participated and discussed in the meeting. The experts provided several recommendations for coping the existing challenges and advancing to the validation of elimination of the LF as a public health problem in Nepal (See Annex 1).

### 3.5 Technical Working Group (TWG) Meeting

Ministry of Health and Population (MoHP) with technical and logistic support from USAID funded Control of Neglected Tropical Diseases Program: RTI/ENVISION organized a two day TWG meeting to update stakeholders on NTDs control programs, discuss next steps towards elimination and control of Neglected Tropical Diseases (NTDs) in Nepal and endorse WHO expert recommendation for strategic changes in implementation of LF MDA. The Thirteenth TWG meeting was organized on 15 and 16 June 2018. The participants were from MoHP, EDCD, LMD, CHD, DWSS, NNJS, NTD Secretariat, WHO and RTI ENVISION. The list of participants are given in the annex 6. The major recommendations made by the TWG meeting on LFE program are summarized below:

**Table 4: Major recommendations of 13<sup>th</sup> TWG meeting**

Issues	Recommendations
Pre-TAS and TAS failing districts due to low coverage and compliance of LF MDA	LFE program will revise current strategy by incorporating LF expert recommendations for upcoming LF MDA as follows: <ol style="list-style-type: none"><li>1. LF MDA dates of each year should be decided in the first month of Nepali Fiscal year i.e. Shrawan (July-August)</li><li>2. Mobilize health workers for dosing LF MDA drugs under direct observation</li><li>3. Number of days for LF MDA will vary according the available health workers in palikas and total target population for LF MDA</li><li>4. Early beginning of Social mobilization activities before MDA i.e. at least before two months of LF MDA dates.</li><li>5. Intensive Supportive supervision and monitoring by using standard check list.</li></ol>

### 3.6 Morbidity Management and Disability Prevention (MMDP)

In support of Liverpool School of Tropical Medicine (LSTM), EDCD has conducted MMDP mapping using MeasureSMS reporting in 8 endemic districts (Panchthar, Bara, Nawalparasi, Gorkha, Lamjung, Palpa, Dang, Baitadi) in 2018(2074/2075). MMDP - MTOT was given to the DPHO/DHO, LF Focal person, medical officer and Statistics focal person of the districts. They conducted training on the respective districts for their health workers. EDCD provided technical support for those trainings. Then, these trained HWs conducted training in their community to the FCHVs. The survey have been completed in all these 8 districts.

At first, two health workers from each Health facilities of these districts are invited to one day training on

“Lymphedema management and SMS reporting for MMDP mapping”. This will trained them about clinical aspects of LF, Lymphoedema self-care, MMDP SMS mapping survey and recording and reporting the survey. Later, these trained health workers will conduct community training for the FCHVs in their respective communities to identify patients in their catchment areas and to provide basis advice to the patients on management of their condition. The FCHVs were then mobilized and engaged in community level to identify patient in their catchment areas and report to the Health workers. HWs then visit those suspected cases and confirm further and report to the concern authority.

In 2016, two districts (Dhading & Kanchanpur) were piloted for Measure SMS, in which MMDP patient searching and reporting was conducted. In 2017, SMS mapping was conducted in two more districts (Saptari and Okhaldhunga). Now, in 2018, 8 more districts were scaled up and the MMDP SMS mapping survey is completed in 12 of 61 endemic districts. EDCD is planning to expand this program rapidly in other endemic districts.

### **3.7 Night blood collection and Examination**

This is one of the measure of the post MDA surveillance. In the hospitals of MDA stopped districts, night blood collection and examination program is being done to identify the microfilariae among people admitted in Inpatient department of those hospitals. In 2016 & 2017, 6 hospitals of 5 districts had conducted night blood collection and examination. In 2018, 28 hospitals have conducted this program after the central level orientation in Kathmandu.

# Strengths, Issues and Way forward of the LFE Program

## Strengths

- Strong government commitment
- Uninterrupted supply of resources for MDA, surveillance and MMDP activities.
- Good communication and collaboration among supporting partners and government
- Good programmatic achievements during the recent years

## Issues of LFE Program

- Institutionalization of Federalism and MDA implementation
- Implementing New Strategy for MDA(after Expert Consultation)
- Poor MDA compliance (specific communities)
- Sustaining the achievements
- Implementation of Integrated vector management
- Scaling up morbidity mapping and self-care activities (All endemic districts)
- Cross Boarder: Issues, Sharing Collaboration.
- Quality MDA in terms of epidemiological coverage especially in specific communities
- Rapid scale of Morbidity mapping activities in the endemic districts

## Way forward

- Scaling up post MDA surveillance (Night blood Sample)
- Scaling up access to care and support of MMDP
- Mobilization of Health workers for MDA(Drug Dosing)
- Focused social mobilization, SBC, advocacy
- Microplanning for MDA and supervision in challenging districts

## Supporting Partners

### World Health Organization (WHO)

The World Health Organization is a specialized agency of the United Nations system and its main constitutional functions are to act the directing and coordinating authority on international health work and to encourage technical cooperation on health with its member states. WHO's mandate which came into force through its constitution in 1948 is as relevant as ever, namely the attainment by all peoples of the highest possible level of health. To this effect WHO provides technical assistance and other support to member states for strengthening respective health systems of those countries.

WHO has been supporting the Lymphatic Filariasis Elimination Program in Nepal from the very beginning of the program. MDA was launched in Parsa district in 2003 with full funding and technical support from WHO. Albendazole used in the campaign is being donated by GlaxoSmithKline (GSK) through WHO. Besides this, WHO has been providing technical and some financial support in disease mapping, implementing and monitoring MDA campaigns and conducting follow up surveys.

### **ENVISION/RTI International**

ENVISION is a United States Agency for International Development (USAID) funded program implemented by Research Triangle Institute (RTI International). This program aims to support the Nepal government to bridge the gap and launch national integrated NTD Control program focusing in three disease programs namely lymphatic filariasis, Soil Transmitted Helminthiases (STH) and trachoma.

A national integrated Plan of Action developed in 2009 with WHO's technical assistance in coordination with the program managers was approved by the Nepal government. An inception meeting was organized in 2010 to officially launch the program. NTD Control Program Steering Committee was formed and the first meeting was held in June 2010.

ENVISION has been supporting Lymphatic Filariasis Elimination program from 2010. ENVISION is providing financial and technical support for MDA, monitoring, evaluation and surveillance activities. Specific areas of support from RTI provided for Lymphatic Filariasis Elimination are: advocacy, planning, capacity building, MDA drug distribution, monitoring and evaluation. ENVISION had fully supported different districts for LF MDA, supported for all the monitoring and evaluation activities of the LFE program and has provided huge amount of partial support for MDA in many districts.

### **CNTD, Liverpool School of Tropical Medicine**

Centre for Neglected Tropical Diseases (CNTD) is a program funded mainly by the Department for International Development (DFID) and GlaxoSmithKline (GSK) and implemented by Liverpool School of Tropical Medicine. The program's main focus is in accordance with WHO's target, i.e., to eliminate LF globally by 2020.

CNTD has provided financial and technical support to Nepal programme to implement advocacy and IEC activities planning and review meetings and surveys. In the recent years, the CNTD support focus on Morbidity mapping and disability prevention especially, free hydrocele surgery and morbidity mapping using SMS techniques.

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# ANNEXES

## **Annex 1: Recommendations from LF Expert Meeting**

### **Lymphatic filariasis elimination in Nepal**

#### **Recommendations from the expert programme review meeting.**

Kathmandu, 12-13 March 2018

#### **Summary on the status of LF elimination**

Nepal is making good progress across several NTD elimination programs. The country has submitted a dossier claiming elimination of trachoma as a public health problem and has also reduced kala azar rates to near elimination thresholds. The progress with elimination of lymphatic filariasis is also encouraging. A total of 61 of 75 districts in Nepal are reported to be LF endemic and required mass drug administration (MDA). Nepal is one of the first countries in the global programme to achieve 100% geographical coverage, reaching all 61 districts with MDA. At least 5 rounds of MDA have been delivered in all districts and 36 have successfully passed the WHO recommended Transmission Assessment Survey (TAS) and stopped MDA. Ten districts are set to implement TAS in 2018 which will decide whether MDA can cease. Only fifteen districts have not yet reduced infection levels or sustained infection levels below elimination thresholds after multiple MDA rounds.

It is encouraging to note that the country has a chance to reduce infection below target thresholds and stop MDA nationwide by 2020. However, achieving this target will require renewed enthusiasm, enhanced efforts with focused investments at both the national and district levels. The overview of activities that should be done by district status is listed in the accompanying document. The recommendations listed below by programmatic area were informed by the presented data, reports, pleas and group work deliberations among the 15 districts. These are presented for consideration by the government of Nepal for overcoming current challenges and pressing forward to eliminate LF:

#### **1. *Planning and Logistics***

- 1.1 National programme should establish an annual time range (2 to 3 months) for which funding should be released and medicines are to be supplied to the districts to enable districts sufficient time for orientation and preparation for the mass drug administration (MDA)
- 1.2 National programme should consider requesting donated DEC free of charge through WHO to overcome delays related to local procurement process and divert funds for procurement to implementation of programme activities.

#### **2. *Mass Drug Administration Strategy***

- 2.1 MDA medicines should be administered by health workers who are more accepted by the community and able to answer questions about the purpose of MDA, medicines, management of AEs and the disease. Volunteers should remain involved to support health workers in mobilization, updating census, assistance during administration (registering and recording participation) and mop-up.
- 2.2 The duration of the MDA should be extended to allow sufficient time for health workers to visit all households, monitor and mop-up for absent household members (consider the trachoma model)
- 2.3 Treatment should be directly observed and marked on treatment records/register
- 2.4 Programme should aim to achieve at least 80% of the total population consuming the medicines during MDA in view of the persistent infection
- 2.5 Timing of the administration should correspond to the time when most people are at home in the target area. (consider any cultural preferences)
- 2.6 Health workers and volunteers should be representative of the target area assigned for administration. (consider religion, ethnicity and gender balance)

### **3. Social Mobilization**

- 3.1 Orient community decision makers, media and community leaders about persistent infection and current high risk among children.
- 3.2 Utilize current epidemiological situation to communicate ongoing risk and motivation of stakeholders to demand a response (locally and nationally)
- 3.3 Communicate coverage results locally by PHC and nationally by district to motivate competition
- 3.4 Nationally, highlight achievements of districts already passed TAS and stopped MDA
- 3.5 Messages need to clearly address concerns around side effects: What side effects are most common? Why side effects occur in infected persons? Whom to contact if experienced? Where to go for evaluation and treatment?. Inform communities that response teams are active during distribution.
- 3.6 Messages should be tailored to reach least compliant and highest infected groups (usually adult males, but may differ by setting)
- 3.7 Messages need to:
  - clearly link disease with the treatments: purpose to stop spread of the parasite to prevent new cases of disease
  - cause and spread by mosquitos
  - communicate that MDA benefits children the most: stopping spread of infection means no new cases, treatment cures child LF infections, repeated removal of intestinal worms
  - identify the method of delivery by health workers including the time, dates and location

### **4. Adverse events management**

- 4.1 Engage and gather support (human resources and technical assistance) from national drug regulatory and pharmacovigilance agency
- 4.2 Update policy with a clear protocol for immediate management of seizures post MDA given the history of adverse events among persons with asymptomatic neurocysticercosis.
- 4.3 Develop mobile adverse event response teams (at least 1 clinical and 1 public health staff)
- 4.4 Develop standard messages for District Health Director/Officer to give to media upon rumors or reported events prior to MDA
- 4.5 Establish a 24hr call-in number for reporting and advice on managing adverse events
- 4.6 Designate facilities for side effect assessment and management (make these locations known to public and ensure stock of medicines/supplies for management)
- 4.7 Ensure adverse event reporting forms are available in all districts
- 4.8 Ensure all adverse events recorded are reported following national pharmacovigilance protocols even if determined not to be related to MDA
- 4.9 Include adverse event management and messages in training of administration teams

### **5. Supervision and training**

- 5.1 Identify field supervisors for every evaluation area and make responsible for concurrent assessment of coverage during the MDA
- 5.2 Use Supervisor's Survey tool to rapidly assess the coverage level and initiate action to raise coverage by mopping up in areas identified as below target
- 5.3 Consider the workforce of the polio eradication programme to serve as MDA planners and supervisors
- 5.4 Prepare standard modules for training on different aspects of MDA planning and implementation to facilitate efforts of passing standardized guidance and messaging to administrators (health workers and volunteers)
- 5.5 Conduct intensive training for all those who are involved in drug administration at the appropriate time frame prior to MDA to enable preparation including mobilization of communities

## 6. **Alternative MDA regimen**

- 6.1 The new regimen of ivermectin, DEC and albendazole (IDA) is more effective at clearing microfilaria from the blood and is as safe as DEC and albendazole. WHO recommends IDA for any area failing impact assessments (pre-TAS or TAS1, TAS2 or TAS3) in 2018 or thereafter.
- 6.2 National programme should modify policy to allow use of ivermectin for LF elimination. WHO can facilitate access to donated ivermectin upon request.

## 7. **M & E**

- 7.1 The programme should continue to seek the support of partners to sustain the capacity for implementing pre-TAS and TAS. The district level programme personnel should be reoriented to participate in each survey conducted in the district. Since the pre-TAS and TAS are crucial decision making processes, the personnel involved in the surveys should be made aware of the importance of the surveys and their responsibility to achieve quality work.
- 7.2 Sampling methodology for surveys:
  - a. the sentinel and spot-check sites should be selected strictly following the WHO guidelines for sample size, the age-group to be sampled and sampling strategy
  - b. Keep the same sentinel sites in districts not yet meeting pre-TAS criteria (where Ag remains >2% or >1% mf)
  - c. Select new spot-check sites in districts failing TAS1 or TAS2. Select communities with high numbers of child positives.
  - d. Collect night blood sample for Mf from the Ag positive individuals
- 7.3 Quality of surveys:
  - a. Teams should be trained and competent in mobilization, selection of persons to test, performing the FTS and reading the results.
  - b. Utilize the pre-TAS, TAS and post-TAS checklists
  - c. Establish a response policy to follow-up in communities where >2% of surveyed children were positive in districts that *passed* TAS.
  - d. Review distribution of positive children in districts that pass TAS and consider segmentation of EUs in future TAS

## 8. **Data management**

- 8.1 National programme should review district microplans and districts to review PHC microplans and give feedback in sufficient time to allow any modification prior to MDA
- 8.2 Ensure districts are clear on the coverage definitions and are reporting treatments consumed over total population
- 8.3 Districts are encouraged to have post-MDA reviews to obtain feedback from distributors, identify programme gaps and make corrections for subsequent MDA
- 8.4 National programme should start organizing all available programme data in preparation of the elimination dossier data file
- 8.5 In preparation of the dossier data file, the national programme should clearly document how the endemicity and need for MDA was determined for all districts in the country. Any districts suspected endemic but never mapped should be considered for re-mapping to determine the need for MDA.

## 9. **Morbidity Management**

National programme should:

- 9.1 Complete morbidity mapping in all historically endemic districts to identify where basic package of care needs to be available. Consider linking morbidity assessments with MDA to increase awareness of the purpose of MDA.
- 9.2 Integrate health facility inspections with other programme activities (case management diseases; skin diseases)

- 9.3 Ensure that at least 1 designated health facility per district is providing the basic package of care for lymphedema management and hydrocele surgery
- 9.4 Strengthen the health system capacity to provide universal coverage to the basic package of care:
- Treatment for acute attacks
  - Management of lymphedema
  - Surgery for hydrocele
  - Treatment for persons with LF infection

#### 10. Post-MDA Surveillance

- 10.1 In the districts passing TAS3, the national programme should identify opportunities to integrate assessment for LF infection with other ongoing surveys or routine surveillance activities.

#### **Annex 2: Baseline Survey summary**

S.N.	Districts	MDA Cycle	Prevalence	Year	Sentinel Sites
1	Parsa	6th	1.08	2003	Pokharia Ward No 5 and 6, Maniyari 1, 2, 3, 4, 7
2	Makawanpur	5th	1.07	2006	Hatiya Ward No. 7 and Daman VDC Palung
3	Chitwan	5th	0.19	2006	Bhandara Ward No. 7 and Ratnanagar Ward no. 8
4	Nawalparasi	5th	4.9	2006	Raninagar Ward No. 6 and Kuriya Ward no. 7
5	Rupandehi	5th	5.19	2006	Barghat and Bishnupura Ward No. 4
6	Rautahat	6th	3.23	2006	Gaur NP Ward no. 13, Sirsiya and Laxmipur Ward no. 8, 9
7	Bara	6th	0.6	2006	Parsauni Ward no. 3, 4 and Kabikoth 4, 5, 6, 7, 9
8	Kapilbastu	6th	5.64	2006	Maharajung Ward no. 1 and Harnampur Ward No. 2, 5
9	Sarlahi	6th	2.48	2007	Balara 1, 8, 9 and Kabilashi 8, 9
10	Dhading	6th	11.67	2006	Benighat Ward no. 1, 8 and Salyantar 2, 5
11	Nuwakot	6th	10.89	2006	Ganeshthan 1, 8 and Tupche 1, 8
12	Dhanusa	6th	2.45	2007	Baphai and LaxmipurBagewa
13	Mahottari	6th	2.43	2007	Vijalpura and Damhimadai
14	Ramechhap	6th	2.72	2007	Manthali 6 and Khadadevi
15	Sindhuli	6th	3.14	2007	Hatpate 4 and Tosrangkhola 2
16	Sindhupalchowk	6th	2.0	2007	Melamchi 5 and Bansbari 7
17	Kavrepalanchowk	6th	9.8	2007	Dapcha - Daraunepokhari 2,5 and Devbhumibaluwa
18	Palpa	6th	0.4	2007	Dovan 1, 6 and Kachal
19	Tanahun	6th	0.5	2007	Byash 11 and Jamuni 5
20	Syanjha	6th	0.71	2007	Chapakot 6 and Waling(GarhauGhyangling)
21	Gorkha	6th	0.4	2007	Prithwinarayan NP 6, Raniban and Aruchanaute 2
22	Kathmandu	4th	1.06	2008	TokhaChandeswori and Gothatar
23	Bhaktapur	4th	1.07	2008	MadhyapurThimi 6 and Katunje 4
24	Lalitpur	4th	1.06	2008	Khokana and Luvu
25	Myagdi	4th	2.33	2008	Arthuge and Rakhupiple
26	Baglung	4th	7.72	2008	Baglung 9 and Narayan 2
27	Arghakanchi	4th	1.52	2008	Tadha 5 and Siddhara 3
28	Parbat	4th	4.83	2008	Khani and Ghiring
29	Kaski	4th	1.39	2008	Pokhara 1 and Simpani 9
30	Pyuthan	4th	1.19	2008	Bange 7 and Bijuwa

31	Lamjung	4th	5.76	2008	Chakratirtha 6 and Dhamilekuwa 1
32	Bhojpur	3rd	0.19	2010	Taksar and Homtang
33	Okhalhunga	3rd	0.19	2010	Taluwa,5,6,7and Baruneshwor 1,2
34	Saptari	3rd	0.97	2010	Odharaha 7 and Sarswor 4
35	Siraha	3rd	1.99	2010	Badharamal 5 and lahan Municipality 5
36	Udayapur	3rd	0.3	2010	Jogidaha 7,8 and Triyuga Municipality 5
37	Banke	3rd	4.3	2010	Rajhena 6,7,8 and Bankatuwa 7,8
38	Dang	3rd	7.5	2010	Sisahaniya 4 and Duruwa 7
39	Rolpa	3rd	0.29	2010	Khungri 2,3,5 and Badachaur 4,5,8
40	Salyan	3rd	0.29	2010	Triveni and Kavrechaur
41	Rukum	3rd	0.09	2010	Chaurjhari 4 and Aathbiskot 2
42	Sunsari	2nd	1.0	2001	NA
43	Dhankuta	2nd	4.6	2001	NA
44	Jhapa	2nd	24.0	2001	NA
45	Illam	2nd	0.8	2005/06	Ilam Hospital, MaitinepalPasupatinagar and Chulachuli Sec. School
46	Pachthar	2nd	0.3	2005/06	Panchthar Sec. School
47	Tehrathum	2nd	1.1	2005/06	Terhathum Sec. School
48	Morang	2nd	13.6	2001	NA
49	Jajarkot	2nd	0.4	2005/06	Tribhuvan Sec. School and Bheri Campus
50	Surkhet	2nd	17.3	2001	NA
51	Bardia	2nd	39.8	2001	NA
52	Dailekh	1st	0	2013	Belpata-6, Kalbhairab-6,7 & 8
53	Aacham	1st	0.33	2013	Sideshwor-1, Mastamandu-6,7 & 9
54	Baitadi	1st	0	2013	Patan- 1 & 3, Gokuleswor- 1, 3 & 9
55	Bajhang	1st	0	2013	Riththapata-1,2 & 5, Matela- 5 & 7
56	Bajura	1st	0	2013	Kolti-1,2 & 3, Betalmandu-7
57	Dadeldhura	1st	0	2013	Jogbudha-3, Sirsa-7 & 8
58	Doti	1st	0	2013	Khirsani-2,3 & 4, Sanagaun-1, 2 & 3
59	Darchula	1st	0	2013	Gokuleswor- 4 , Dhap- 5 & 6
60	Kailali	1st	2.16	2013	Pahalmanpur-6, Malakheti-8
61	Kanchanpur	1st	0	2013	Jhalari-4, Krishnapur-1

### ***Annex 3: Mapping results***

S.N.	District	Mapping			
		Year	Prev.	Method	Remarks
<b>Eastern Region</b>					
1	Bhojpur				
2	Dhankuta	2001	4.6%	ICT	
3	Ilam	2005/06	0.8%	ICT	ICT Mapping was also conducted in 2001
4	Jhapa	2001	24.0%	ICT	
5	Khotang	2012	0.66%	ICT	ICT mapping was also done in 2005/2006, Remapping was done in 2012
6	Morang	2001	13.6%	ICT	
7	Okhaldhunga				
8	Panchthar	2005/06	0.3%	ICT	

9	Sangkhuwasava				
10	Saptari	2001	0.0%	ICT	
11	Siraha	2001	3.3%	ICT	
12	Solukhumbu				
13	Sunsari	2001	1.0%	ICT	
14	Taplejung				
15	Teharathum	2005/06	1.1%	ICT	
16	Udayapur	2001	4.0%	ICT	
<b>Central Region</b>					
17	Bara				
18	Bhaktapur	2001	19.8%	ICT	
19	Chitwan	2001	18.4%	ICT	
20	Dhading	2001	14.7%	ICT	
21	Dhanusha	2001	0.7%	ICT	
22	Dolakha				
23	Kathmandu	2001	20.0%	ICT	
24	Kavre	2001	26.0%	ICT	
25	Lalitpur	2001	0.0%	ICT	
26	Mahottari	2001	0.0%	ICT	
27	Makwanpur	2001	16.8%	ICT	
28	Nuwakot	2001	29.4%	ICT	
29	Parsa	2001	20.3%	ICT	
30	Ramechhap				
31	Rasuwa				
32	Rautahat	2001	19.0%	ICT	
33	Sarlahi				
34	Sindhuli	2001	4.7%	ICT	
35	Sindupalchok				
<b>Western Region</b>					
36	Arghakhanchi	2005/06	1.9%	ICT	
37	Baglung	2005/06	12.4%	ICT	
38	Gorkha	2001	19.6%	ICT	
39	Gulmi	2012	0.32%	ICT	ICT mapping was also done in 2005/2006, Remapping was done in 2012
40	Kapilvastu	2001	24.0%	ICT	
41	Kaski	2001	7.3%	ICT	
42	Lamjung				
43	Manang				
44	Mustang				
45	Myagdi	2005/06	11.8%	ICT	
46	Nawalparasi	2001	22.8%	ICT	
47	Palpa	2001	2.0%	ICT	
48	Parbat				
49	Rupandehi	2001	17.6%	ICT	
50	Syanja	2001	14.7%	ICT	
51	Tanahun	2001	16.0%	ICT	

Mid-Western Region					
52	Banke	2001	20.8%	ICT	
53	Bardiya	2001	39.8%	ICT	
54	Dailekh				
55	Dang	2001	29.8%	ICT	
56	Dolpa				
57	Humla				
58	Jajarkot	2005/06	0.4%	ICT	
59	Jumla				
60	Kalikot				
61	Mugu				
62	Pyuthan	2005/06	2.2%	ICT	
63	Rolpa				
64	Rukum				
65	Salyan	2005/06	0.9%	ICT	
66	Surkhet	2001	17.3%	ICT	
Far-Western Region					
67	Achham				
68	Baitadi				
69	Bajhang	2005/06	0.5%	ICT	
70	Bajura	2005/06	0.5%	ICT	
71	Dadeldhura	2001	6.5%	ICT	
72	Darchula	2012	1.25%	ICT	Remapping was done in 2012
73	Doti	2001	6.7%	ICT	
74	Kailali	2001	6.0%	ICT	
75	Kanchanpur	2001	20.0%	ICT	

#### Annex 4: Historical Survey Site Information of the districts

Name of Districts	Baseline	Pre-TAS		Pre re-TAS	
	Name of Sentinel Sites	Name of Sentinel Sites	Name of Spot Check Sites	Name of Sentinel Sites	Name of Spot Check Sites
Parsa	Pokharia (5,6) & Maniyari(1,2,3,4,&7)				
Makawanpur	Hatiya(7), Daman VDC(Palung)				
Chitwan	Bhandara(7), Ratnanagar (8)				
Nawalparasi	Raninagar(6), Kuriya (7)				
Rupandehi	Barghat, Bishnupura(4)				
Kapilbastu	Maharajgunj(1), Harnampur(2,5)	Maharajgunj(1)	Hariharpur(4,7)	Maharajgunj (1)	Bahadurgunj VDC (1,2,5,6) Badganga Municipality(2,6)-previous badganga VDC(5)
Bara	Parsauni(3,4), Kabahigoth(4,5,6,7,9)	Parsauni(3,4)	Motisara (3,4)		
Rautahat	Gaur NP(13), Sirsiya, Laxmipur(8,9)	Gaur NP(13), Sirsiya	Kathariya(4,5)		
Sarlahi	Balara(1,8,9) and Kabilashi(8,9)	Kabilashi(8,9)	Chandranagar kamada (4,5)		

<b>Dhading</b>	Benighat(1,8) Salyantar(2,5)	Salyantar(2,5)	Salyantar 3		
<b>Nuwakot</b>	Ganesthan (1,8), Tupche (1,8)	Tupche (1,8)	Tupche Akahari 3		
<b>Kavrepalanchowk</b>	Dapcha-Daraunepokhari(2,5) & Devbhumi baluwa	Devbhumi baluwa	Mahadevsthan (8,9)		
<b>Dhanusa</b>	Baphai and Laxmipur Bagewa	Laxmipur Bagewa 5	Sinurjoda (1,5,7)		
<b>Mahottari</b>	Vijalpara, Damhimadai	Damhimadai (3)	Gonarpura (6.,7,8)		
<b>Sindhuli</b>	Hatpate (4), Tosrangkhola(2)	Hatpate (4)	Sirthauli (4)		
<b>Ramechhap</b>	Manthali(6), Khadadevi	Manthali(6)	Kathajor(6,7)		
<b>Sindhupalchowk</b>	Melamchi(5), Bansbari(7)	Bansbari(7)	Melamchi(2)		
<b>Palpa</b>	Dovan (1,6), Kachal	Dovan (1,6)	Madanpokhara(4,7)		
<b>Tanahun</b>	Byash(11), Jamune (5)	Jamune (5)	Manpang(3)		
<b>Syangja</b>	Chapakot(6), Walling(Garhau Ghyangling)	Walling(Garhau Ghyangling 4,5)	Jagatbhanjyang (5,6)		
<b>Gorkha</b>	Prithvinarayan NP(6), Raniban and Aruchanaute 2	Prithvinarayan NP(6)	Prithvinarayan NP,Chepetar(10)		
<b>Kathmandu</b>	Tokha chandeswori and Gothatar	Tokha	Gokarna, Sankhu, Kathmandu (4)-Gaushala, kathmandu (16,14)-Balkhu and Balaju		
Lalitpur	Khokana, Luvu	Bungmati	Dukuchhap,malta, Battedanda, Luvu, lalitpur sub-metro	Bungmati	Luvu
<b>Bhaktapur</b>	Madyapur Thimi(6), Katunje(4)	Katunje	Nagdes, bhaktapur(5), Changunarayan		
<b>Kaski</b>	Pokhara (1), Simpani(9)	Pokhara (1) Simpani	Lamachaur		
<b>Parbat</b>	Khani, Ghiring	khanigaun	Pang	khanigaun	Pang
<b>Myagdi</b>	Arthuge, Rakhupiple	Singha(Tatopani)	Rakhupiple	Singha (Tatopani)	Mangal Ghat
<b>Baglung</b>	Baglung(9), Narayan (2)	Narayansthan	Dagatundanda (Kharbang)	Narayansthan	Kusmisera
<b>Argakhanchi</b>	Tandha(5), Sidhara(3)	Tandha	Nuwakot		
<b>Pyuthan</b>	Bange(7), Bijuwa	Bangeshal	Bhingri		
<b>Lamjung</b>	Chakratirtha(7), Dhamilekuwa (1)	Chakra Tirtha	Bhotewadar	Chakra Tirtha	Dhamulikuwa
<b>Banke</b>	Rajena (6,7,8),Bankatuwa(7,8)	Rajena (6,7,8)-kopalpur NP	Nepalgunj Municipality(11,5)	Rajena	Baijapur & Nepalgunj
<b>Bhojpur</b>	Taksar, Homtang	Taksar	Jarayotar	Taksar	Mulpani (Dingla)
<b>Dang</b>	Sisaniya(4), Duruwa (7)	Sisaniya(4)	Rampur	Sisaniya	Tarigaun
<b>Okhaldhunga</b>	Taluwa(5,6,7), Baruneshwor(1,2)	Baruneshwor(1,2)	Manebhanjyang		
<b>Rolpa</b>	Khungri(2,3,5), Badachaur(4,5,8)	Badachaur	Sulichaur		
<b>Rukum</b>	Chuarjahari (4), Aathbiskot(2)	Chuarjahari (4) Bijayeswori	Garila		
<b>Salyan</b>	Triveni and Kavrechaur	Triveni	Devsthal		
<b>Saptari</b>	Odharaha(7), Sarswor(4)	Sarswar(4)	Parasbani		
<b>Siraha</b>	Badharamal(5),Lahan municipality(5)	Lahan(5)	Baraharamal		
<b>Udayapur</b>	Jogidaha(7,8),Triyuga Municipality(5)	Triyuga	Sundarpur	Triyuga	Katari
<b>Dhankuta</b>	N/A	Dandabazar	Leguwa		
<b>Ilam</b>	N/A(School based)	Chulachuli	Godak		
<b>Jhapa</b>	N/A	Damak	Sanishchare		
<b>Morang</b>	N/A	Majhare	Dadaraberia		
<b>Panchthar</b>	N/A(School based)	Therpu	Phidim		
<b>Sunsari</b>	N/A	Kaptangang	Narsingh VDC		
<b>Tehrathum</b>	N/A(School based)	Morahang	Myanglung		
<b>Bardiya</b>	N/A	Babai NP(2) Durmani(Neulapur)	Dhadhwar(4) Baida Baidi		

Jajarkot	N/A(School based)	Khalanga	Kudu		
Surkhet	N/A	Botechaur(Sahara VDC)	Uttarganga(5,6)		
Dailekh	Belpata(6), Kalbhairab(6,7,8)	Belpata	Rakam karnali		
Achham	Siddeshwor(1), Mastamandu(6,7,8)	Mastamandu (6, 7, 8)	Mangalsen 5		
Baitadi	Patan(1,3), Gokuleswor(1,3,9)	Patan (1,3)	Shivanath		
Bajhang	Riththapata(1,2,5), Matela(5,7)	Matela	Bhairavsthan		
Bajura	Kolti(1,2,3), Betalmandu(7)	Kolti	Kuldevmandu		
Dadeldhura	Jogbudha(3), Sirsa (7,8)	jogbudha(3)	Alitaal		
Darchula	Gokuleswor & UKU(4), Dhap(5,6)	Dhap(5,6)	Gokuleswor		
Doti	Khirsani(2,3,4), Sanagaun(1,2,3)	Sanagaun	Banlek		
Kailali	Pahalmanpur(6), Malakheti(1)	Pahalmanpur(6)	Chuwa		
Kanchanpur	Jhalari(4), Krishnapur(1)	krishnapur 1	Belori		

### Annex 5: Year Wise MDA Coverage of the districts

Year	Districts	Total Population	Eligible Population	Treated population	Treated %	Coverage %	MDA Cycle
2003	<b>1 district</b>						
	Parsa	505,000	475,000	412,923	86.93	81.77	1st
	<b>Total</b>	<b>505,000</b>	<b>475,000</b>	<b>412,923</b>	<b>86.93</b>	<b>81.77</b>	

2004	<b>3 districts</b>						
	Parsa	516,309	484,685	390,382	80.54	75.61	2nd
	Makwanpur	457,840	428,361	394,125	92.01	86.08	1st
	Chitwan	567,051	538,853	473,606	87.89	83.52	1st
	<b>Total</b>	<b>1,541,200</b>	<b>1,451,899</b>	<b>1,258,113</b>	<b>86.65</b>	<b>81.63</b>	

2005	<b>5 districts</b>						
	Parsa	552,645	516,502	412,893	79.94	74.71	3rd
	Makwanpur	361,014	339,343	304,013	89.59	84.21	2nd
	Chitwan	556,565	521,735	463,545	88.85	83.29	2nd
	Nawalparasi	646,881	641,808	572,376	89.18	88.48	1st
	Rupandehi	891,026	807,662	756,479	93.66	84.90	1st
	<b>Total</b>	<b>3,008,131</b>	<b>2,827,050</b>	<b>2,509,306</b>	<b>88.76</b>	<b>83.42</b>	

2006	<b>3 districts</b>						
	Parsa	554,697	516,328	433,153	83.89	78.09	4th
	Nawalparasi	676,333	643,399	553,541	86.03	81.84	2nd
	Rupandehi	844,782	801,250	742,565	92.68	87.90	2nd
	<b>Total</b>	<b>2,075,812</b>	<b>1,960,977</b>	<b>1,729,259</b>	<b>88.18</b>	<b>83.31</b>	

2007	21 districts						
	Parsa	567,767	522,228	412,674	79.02	72.68	5th
	Makwanpur	467,159	427,474	388,138	90.80	83.08	3rd
	Chitwan	582,425	546,544	468,329	85.69	80.41	3rd
	Nawalparasi	688,942	654,386	560,635	85.67	81.38	3rd
	Rupandehi	903,391	851,947	733,742	86.13	81.22	3rd
	Rautahat	628,557	588,955	552,808	93.86	87.95	1st
	Bara	685,000	670,272	565,927	84.43	82.62	1st
	Kapilbastu	554,931	521,528	450,777	86.43	81.23	1st
	Sarlahi	749,741	704,944	598,523	84.90	79.83	1st
	Dhading	411,112	390,122	336,162	86.17	81.77	1st
	Nuwakot	320,431	314,176	282,880	90.04	88.28	1st
	Dhanusha	828,388	744,743	583,780	78.39	70.47	1st
	Mahottari	668,701	631,229	558,661	88.50	83.54	1st
	Ramechhap	269,923	253,502	201,612	79.53	74.69	1st
	Sindhuli	322,122	302,323	284,445	94.09	88.30	1st
	Sindhupalchowk	355,636	339,536	274,270	80.78	77.12	1st
	Kavrepalanchowk	456,502	432,862	380,364	87.87	83.32	1st
	Palpa	339,609	323,487	259,665	80.27	76.46	1st
	Tanahun	380,425	355,745	299,911	84.31	78.84	1st
	Syangja	378,745	362,589	300,263	82.81	79.28	1st
Gorkha	347,362	331,782	284,630	85.79	81.94	1st	
<b>Total</b>	<b>10,906,869</b>	<b>10,270,374</b>	<b>8,778,196</b>	<b>85.47</b>	<b>80.48</b>		

2009	21 districts						
	Parsa	593,668	534,002	410,446	76.86	69.14	6th
	Makwanpur	537,608	511,639	401,600	78.49	74.70	4th
	Chitwan	589,983	558,580	494,958	88.61	83.89	4th
	Nawalparasi	672,282	641,048	563,745	87.94	83.86	4th
	Rupandehi	987,720	850,394	765,480	90.01	77.50	4th
	Rautahat	644,315	598,329	597,528	99.87	92.74	2nd
	Bara	666,932	601,433	564,939	93.93	84.71	2nd
	Kapilbastu	563,362	526,255	461,406	87.68	81.90	2nd
	Sarlahi	766,849	721,157	612,289	84.90	79.84	2nd
	Dhading	412,643	389,832	321,538	82.48	77.92	2nd
	Nuwakot	339,313	310,000	267,746	86.37	78.91	2nd
	Dhanusha	896,436	762,623	670,679	87.94	74.82	2nd
	Mahottari	469,168	449,290	420,596	93.61	89.65	2nd
	Ramechhap	258,889	245,997	186,633	75.87	72.09	2nd
	Sindhuli	371,280	325,140	270,591	83.22	72.88	2nd
	Sindhupalchowk	358,120	341,566	259,181	75.88	72.37	2nd
	Kavrepalanchowk	423,985	395,155	295,039	74.66	69.59	2nd
	Palpa	277,813	259,597	250,324	96.43	90.11	2nd
	Tanahun	369,787	328,339	305,355	93.00	82.58	2nd
	Syangja	375,098	357,173	303,904	85.09	81.02	2nd
Gorkha	332,439	315,462	266,812	84.58	80.26	2nd	
<b>Total</b>	<b>10,907,690</b>	<b>10,023,011</b>	<b>8,690,789</b>	<b>86.71</b>	<b>79.68</b>		

<b>30 districts</b>							
<b>2010</b>	Makwanpur	491,126	465,167	424,213	91.20	86.38	5th
	Chitwan	593,869	566,622	506,280	89.35	85.25	5th
	Nawalparasi	658,418	654,017	574,782	87.88	87.30	5th
	Rupandehi	932,123	879,687	775,742	88.18	83.22	5th
	Rautahat	654,367	597,031	585,843	98.13	89.53	3rd
	Bara	675,072	603,446	559,360	92.69	82.86	3rd
	Kapilbastu	574,999	538,635	493,691	91.66	85.86	3rd
	Sarlahi	788,100	732,977	732,555	99.94	92.95	3rd
	Dhading	419,267	396,690	338,482	85.33	80.73	3rd
	Nuwakot	334,289	308,272	266,068	86.31	79.59	3rd
	Dhanusha	845,693	793,705	677,923	85.41	80.16	3rd
	Mahottari	729,257	606,243	584,362	96.39	80.13	3rd
	Ramechhap	259,642	245,041	190,219	77.63	73.26	3rd
	Sindhuli	326,944	300,277	281,727	93.82	86.17	3rd
	Sindhupalchowk	360,560	356,831	280,283	78.55	77.74	3rd
	Kavrepalanchowk	375,016	355,279	292,383	82.30	77.97	3rd
	Palpa	292,776	272,372	259,764	95.37	88.72	3rd
	Tanahun	368,194	350,508	328,985	93.86	89.35	3rd
	Syangja	326,886	310,659	279,322	89.91	85.45	3rd
	Gorkha	337,246	319,317	268,659	84.14	79.66	3rd
	Kathmandu	1,308,704	1,275,699	968,631	75.93	74.01	1st
	Lalitpur	405,469	405,469	277,014	68.32	68.32	1st
	Bhaktapur	268,991	248,097	183,834	74.10	68.34	1st
	Kaski	452,885	432,006	340,343	78.78	75.15	1st
	Parbat	183,751	173,400	135,170	77.95	73.56	1st
	Myagdi	132,594	125,245	109,198	87.19	82.36	1st
	Baglung	312,830	312,130	250,538	80.27	80.09	1st
	Arghakhanchi	262,671	249,540	190,449	76.32	72.50	1st
	Pyuthan	279,050	262,423	192,572	73.38	69.01	1st
	Lamjung	212,061	202,566	159,919	78.95	75.41	1st
<b>Total</b>	<b>14,162,850</b>	<b>13,339,351</b>	<b>11,508,311</b>	<b>86.27</b>	<b>81.26</b>		

2011	<b>36 districts</b>						
	Rautahat	665105	608456	584099	96.00	87.82	4th
	Bara	692039	645123	597737	92.65	86.37	4th
	Kapilbastu	577686	541339	478940	88.47	82.91	4th
	Sarlahi	793511	739708	629134	85.05	79.28	4th
	Dhading	416823	393487	336719	85.57	80.78	4th
	Nuwakot	331980	313726	270102	86.09	81.36	4th
	Dhanusha	753490	730913	655548	89.69	87.00	4th
	Mahottari	667811	635451	579045	91.12	86.71	4th
	Ramechhap	252317	239510	189273	79.03	75.01	4th
	Sindhuli	332505	311277	279683	89.85	84.11	4th
	Sindhupalchowk	370617	348978	261385	74.90	70.53	4th
	Kavrepalanchowk	370300	352630	271221	76.91	73.24	4th
	Palpa	270438	255237	238419	93.41	88.16	4th
	Tanahu	372222	323114	297728	92.14	79.99	4th
	Syangja	370761	351978	286124	81.29	77.17	4th
	Gorkha	350057	327383	276889	84.58	79.10	4th
	Kathmandu	1377573	1320754	958462	72.57	69.58	2nd
	Lalitpur	420749	394779	285481	72.31	67.85	2nd
	Bhaktapur	274469	251582	118270	47.01	43.09	2nd
	Kaski	454844	425757	376845	88.51	82.85	2nd
	Parbat	185437	168697	129975	77.05	70.09	2nd
	Myagdi	135964	127866	107347	83.95	78.95	2nd
	Baglung	329108	312123	235173	75.35	71.46	2nd
	Arghakhanchi	257937	244439	191089	78.17	74.08	2nd
	Pyuthan	276717	244584	218887	89.49	79.10	2nd
	Lamjung	239737	227285	188940	83.13	78.81	2nd
	Banke	516688	487262	442492	90.81	85.64	1st
	Bhojpur	223086	204838	163369	79.76	73.23	1st
	Dang	551059	513805	481561	93.72	87.39	1st
	Okhaldhunga	169701	155308	116930	75.29	68.90	1st
	Rolpa	266031	236332	197152	83.42	74.11	1st
	Rukum	225968	208466	207714	99.64	91.92	1st
Salyan	281370	263402	218295	82.88	77.58	1st	
Saptari	683091	641142	550145	85.81	80.54	1st	
Siraha	675386	630548	546799	86.72	80.96	1st	
Udayapur	372886	356133	309854	87.01	83.10	1st	
<b>Total</b>	<b>15505463</b>	<b>14533412</b>	<b>12276826</b>	<b>84.47</b>	<b>79.18</b>		

		<b>46 districts</b>					
<b>2012</b>	Rautahat	665105	618548	466852	75.48%	70.19%	5th
	Bara	692039	643596	533646	82.92%	77.11%	5th
	Kapilbastu	577686	537248	484429	90.17%	83.86%	5th
	Sarlahi	793511	737965	618806	83.85%	77.98%	5th
	Dhading	416823	387645	326069	84.12%	78.23%	5th
	Nuwakot	331980	308741	241602	78.25%	72.78%	5th
	Dhanusha	753490	700746	652681	93.14%	86.62%	5th
	Mahottari	667811	621064	586255	94.40%	87.79%	5th
	Ramechhap	252317	234655	180085	76.74%	71.37%	5th
	Sindhuli	332505	309230	266738	86.26%	80.22%	5th
	Sindhupalchowk	370617	344674	249259	72.32%	67.26%	5th
	Kavrepalanchowk	370300	344379	260145	75.54%	70.25%	5th
	Palpa	270438	251507	221069	87.90%	81.74%	5th
	Tanahu	372222	346166	304054	87.83%	81.69%	5th
	Syangja	370761	344808	268634	77.91%	72.45%	5th
	Gorkha	350057	325553	257982	79.24%	73.70%	5th
	Kathmandu	1377573	1281143	664056	51.83%	48.20%	3rd
	Lalitpur	420749	391297	168546	43.07%	40.06%	3rd
	Bhaktapur	274469	255256	125927	49.33%	45.88%	3rd
	Kaski	454844	423005	355157	83.96%	78.08%	3rd
	Parbat	185437	172456	117618	68.20%	63.43%	3rd
	Myagdi	135964	126447	102100	80.75%	75.09%	3rd
	Baglung	329108	306070	219538	71.73%	66.71%	3rd
	Arghakhanchi	257937	239881	169403	70.62%	65.68%	3rd
	Pyuthan	276717	257347	190290	73.94%	68.77%	3rd
	Lamjung	239737	222955	148625	66.66%	62.00%	3rd
	Banke	516688	480520	245065	51.00%	47.43%	2nd
	Bhojpur	223086	207470	134733	64.94%	60.40%	2nd
	Dang	551059	512485	321015	62.64%	58.25%	2nd
	Okhaldhunga	169701	157822	118415	75.03%	69.78%	2nd
	Rolpa	266031	247409	166881	67.45%	62.73%	2nd
	Rukum	225968	210150	172662	82.16%	76.41%	2nd
	Salyan	281370	261674	168437	64.37%	59.86%	2nd
	Saptari	683091	635275	495154	77.94%	72.49%	2nd
	Siraha	675386	628109	504456	80.31%	74.69%	2nd
	Udayapur	372886	346784	212846	61.38%	57.08%	2nd
	Dhankuta	196438	182687	101948	55.80%	51.90%	1st
	Illam	340170	316358	208362	65.86%	61.25%	1st
	Jhapa	839660	780884	466787	59.78%	55.59%	1st
	Morang	1017282	946072	716324	75.72%	70.42%	1st
	Panchthar	239205	222461	141392	63.56%	59.11%	1st
	Sunsari	768550	714752	518869	72.59%	67.51%	1st
	Tehrathum	132407	123139	64864	52.68%	48.99%	1st
	Bardiya	467603	434871	221785	51.00%	47.43%	1st
	Jajarkot	160692	149444	142036	95.04%	88.39%	1st
	Surkhet	350038	325535	245292	75.35%	70.08%	1st
<b>Total - National</b>	<b>20017508</b>	<b>18616282</b>	<b>13546889</b>	<b>72.77%</b>	<b>67.68%</b>		

2013	56 districts						
	Rautahat	686,722	638651	590866	92.52%	86.04%	6th
	Bara	687,708	639568	554873	86.76%	80.68%	6th
	Kapilbastu	571,936	531900	497969	93.62%	87.07%	6th
	Sarlahi	769,729	715848	626293	87.49%	81.37%	6th
	Dhading	336,067	312542	299734	95.90%	89.19%	6th
	Nuwakot	277,471	258048	242048	93.80%	87.23%	6th
	Dhanusha	754,777	701943	702851	100.13%	93.12%	6th
	Mahottari	627,580	583649	579094	99.22%	92.27%	6th
	Ramechhap	202,646	188461	167890	89.08%	82.85%	6th
	Sindhuli	296,192	275459	268159	97.35%	90.54%	6th
	Sindhupalchowk	287,798	267652	237298	88.66%	82.45%	6th
	Kavrepalanchowk	381,937	355201	254264	71.58%	66.57%	6th
	Palpa	261,180	242897	193488	79.66%	74.08%	6th
	Tanahu	323,288	300658	267293	88.90%	82.68%	6th
	Syangja	289,148	268908	253177	94.15%	87.56%	6th
	Gorkha	271,061	252087	236835	93.95%	87.37%	6th
	Kathmandu	1,744,240	1622143	767473	47.31%	44.00%	4th
	Lalitpur	468,132	435363	211590	48.60%	45.20%	4th
	Bhaktapur	304,651	283325	135814	47.94%	44.58%	4th
	Kaski	492,098	457651	350961	76.69%	71.32%	4th
	Parbat	146,590	136329	119879	87.93%	81.78%	4th
	Myagdi	113,641	105686	100778	95.36%	88.68%	4th
	Baglung	268,613	249810	186087	74.49%	69.28%	4th
	Arghakhanchi	197,632	183798	160326	87.23%	81.12%	4th
	Pyuthan	228,102	212135	195919	92.36%	85.89%	4th
	Lamjung	167,724	155983	136919	87.78%	81.63%	4th
	Banke	491,313	456921	309640	67.77%	63.02%	3rd
	Bhojpur	182,459	169687	130991	77.20%	71.79%	3rd
	Dang	552,583	513902	359006	69.86%	64.97%	3rd
	Okhaldhunga	147,984	137625	107815	78.34%	72.86%	3rd
	Rolpa	224,506	208791	171449	82.12%	76.37%	3rd
Rukum	208,567	193967	174269	89.84%	83.56%	3rd	
Salyan	242,444	225473	186223	82.59%	76.81%	3rd	
Saptari	639,284	594534	563621	94.80%	88.16%	3rd	
Siraha	637,328	592715	504506	85.12%	79.16%	3rd	
Udayapur	317,532	295305	222372	75.30%	70.03%	3rd	
Dhankuta	163,412	151973	98418	64.76%	60.23%	2nd	
Illam	290,254	269936	202666	75.08%	69.82%	2nd	
Jhapa	812,650	755765	507929	67.21%	62.50%	2nd	
Morang	965,370	897794	688206	76.66%	71.29%	2nd	
Panchthar	191,817	178390	126078	70.68%	65.73%	2nd	

Sunsari	763,487	710043	478345	67.37%	62.65%	2nd
Tehrathum	101,577	94467	61808	65.43%	60.85%	2nd
Bardiya	426,576	396716	294748	74.30%	69.10%	2nd
Jajarkot	171,304	159313	134782	84.60%	78.68%	2nd
Surkhet	350,804	326248	243595	74.67%	69.44%	2nd
Dailekh	261,770	243446	220293	90.49%	84.16%	1st
Achham	257,477	239454	204245	85.30%	79.33%	1st
Baitadi	250,898	233335	218044	93.45%	86.91%	1st
Bajhang	195,159	181498	159954	88.13%	81.96%	1st
Bajura	134,912	125468	121392	96.75%	89.98%	1st
Dadeldhura	142,094	132147	114201	86.42%	80.37%	1st
Darchula	133,274	123945	111101	89.64%	83.36%	1st
Doti	211,746	196924	163387	82.97%	77.16%	1st
Kailali	775,709	721409	516202	71.55%	66.55%	1st
Kanchanpur	451,248	419661	383043	91.27%	84.89%	1st
<b>Total - National</b>	<b>21,852,201</b>	<b>20,322,547</b>	<b>16,116,207</b>	<b>79.3%</b>	<b>73.8%</b>	

2014	<b>41 districts</b>						
	Kapilbastu	585,827	544819	474598	87.11%	81.01%	7th
	Kathmandu	1,875,014	1743763	787633	45.17%	42.01%	5th
	Lalitpur	490,924	456559	284262	62.26%	57.90%	5th
	Bhaktapur	317,323	295110	148264	50.24%	46.72%	5th
	Kaski	510,216	474501	373724	78.76%	73.25%	5th
	Parbat	145,462	135280	114799	84.86%	78.92%	5th
	Myagdi	113,618	105665	95664	90.54%	84.20%	5th
	Baglung	270,177	251265	218315	86.89%	80.80%	5th
	Arghakhanchi	199,237	185290	165824	89.49%	83.23%	5th
	Pyuthan	238,912	222188	198637	89.40%	83.14%	5th
	Lamjung	167,882	156130	136183	87.22%	81.12%	5th
	Banke	512,222	476366	343883	72.19%	67.14%	4th
	Bhojpur	181,108	168430	132397	78.61%	73.10%	4th
	Dang	574,418	534209	393835	73.72%	68.56%	4th
	Okhaldhunga	147,053	136759	108324	79.21%	73.66%	4th
	Rolpa	229,856	213766	171374	80.17%	74.56%	4th
	Rukum	214,606	199584	194102	97.25%	90.45%	4th
	Salyan	248,631	231227	193545	83.70%	77.84%	4th
	Saptari	658,971	612843	594335	96.98%	90.19%	4th
	Siraha	654,919	609075	481514	79.06%	73.52%	4th
	Udayapur	327,659	304723	226393	74.29%	69.09%	4th
	Dhankuta	163,770	152306	106084	69.65%	64.78%	3rd
	Ilam	297,907	277054	210842	76.10%	70.77%	3rd
	Jhapa	831,610	773397	481118	62.21%	57.85%	3rd
	Morang	985,166	916204	572456	62.48%	58.11%	3rd
	Panchthar	197,791	183946	131700	71.60%	66.59%	3rd
	Sunsari	772,842	718743	527102	73.34%	68.20%	3rd
	Tehrathum	100,037	93034	65317	70.21%	65.29%	3rd
	Bardiya	434,300	403899	331113	81.98%	76.24%	3rd
	Jajarkot	179,323	166770	139800	83.83%	77.96%	3rd
	Surkhet	372,762	346669	272819	78.70%	73.19%	3rd
	Dailekh	270,431	251501	231690	92.12%	85.67%	2nd
Achham	262,459	244087	221597	90.79%	84.43%	2nd	
Baitadi	254,988	237139	214389	90.41%	84.08%	2nd	
Bajhang	201,278	187189	169143	90.36%	84.03%	2nd	
Bajura	140,226	130410	123397	94.62%	88.00%	2nd	
Dadeldhura	144,103	134016	102562	76.53%	71.17%	2nd	
Darchula	135,344	125870	107575	85.47%	79.48%	2nd	
Doti	212,575	197695	175390	88.72%	82.51%	2nd	
Kailali	797,449	741628	546153	73.64%	68.49%	2nd	
Kanchanpur	455,673	423776	365744	86.31%	80.26%	2nd	
<b>Total - National</b>	<b>15,874,069</b>	<b>14,762,884</b>	<b>10,933,596</b>	<b>74.1%</b>	<b>68.88%</b>		

2015	<b>41 districts</b>						
	Kapilbastu	595488	553804	471155	85.08%	79.12%	8th
	Kathmandu	1931225	1796039	882575	49.14%	45.70%	6th
	Lalitpur	499879	464887	290616	62.51%	58.14%	6th
	Bhaktapur	323860	301190	144253	47.89%	44.54%	6th
	Kaski	517181	480978	385242	80.10%	74.49%	6th
	Parbat	143457	133415	119551	89.61%	83.34%	6th
	Myagdi	115997	107877	96265	89.24%	82.99%	6th
	Baglung	266900	248217	213700	86.09%	80.07%	6th
	Arghakhanchi	194651	181025	153890	85.01%	79.06%	6th
	Pyuthan	230853	214693	195321	90.98%	84.61%	6th
	Lamjung	164784	153249	128288	83.71%	77.85%	6th
	Banke	516289	480149	366738	76.38%	71.03%	5th
	Bhojpur	176227	163891	128527	78.42%	72.93%	5th
	Dang	574065	533880	312737	58.58%	54.48%	5th
	Okhaldhunga	144555	134436	109351	81.34%	75.65%	5th
	Rolpa	224318	208616	176204	84.46%	78.55%	5th
	Rukum	212982	198073	191952	96.91%	90.13%	5th
	Salyan	269711	250831	190456	75.93%	70.61%	5th
	Saptari	657055	611061	595052	97.38%	90.56%	5th
	Siraha	654291	608491	490745	80.65%	75.00%	5th
	Udayapur	323476	300833	233613	77.66%	72.22%	5th
	Dhankuta	160439	149208	110054	73.76%	68.60%	4th
	Illam	289531	269264	225853	83.88%	78.01%	4th
	Jhapa	836899	778316	508993	65.40%	60.82%	4th
	Morang	993610	924057	629103	68.08%	63.31%	4th
	Panchthar	187917	174763	130818	74.85%	69.61%	4th
	Sunsari	792728	737237	517124	70.14%	65.23%	4th
	Tehrathum	98015	91154	64570	70.84%	65.88%	4th
	Bardiya	435353	404878	344448	85.07%	79.12%	4th
	Jajarkot	180621	167978	145572	86.66%	80.60%	4th
	Surkhet	362262	336904	284579	84.47%	78.56%	4th
	Dailekh	271195	252211	224460	89.00%	82.77%	3rd
Achham	263382	244945	217810	88.92%	82.70%	3rd	
Baitadi	254727	236896	203058	85.72%	79.72%	3rd	
Bajhang	202733	188542	166035	88.06%	81.90%	3rd	
Bajura	142345	132381	126755	95.75%	89.05%	3rd	
Dadeldhura	145284	135114	113284	83.84%	77.97%	3rd	
Darchula	135591	126100	100058	79.35%	73.79%	3rd	
Doti	207263	192755	176481	91.56%	85.15%	3rd	
Kailali	813772	756808	564085	74.53%	69.32%	3rd	
Kanchanpur	470473	437540	388253	88.74%	82.52%	3rd	
<b>Total - National</b>	<b>15,981,384</b>	<b>14,862,687</b>	<b>11,117,624</b>	<b>74.8%</b>	<b>69.57%</b>		

2016	<b>36 districts</b>						
	Kapilbastu	607225	564719	0	0.00%	0.00%	No MDA
	Lalitpur (Rural)	267050	248357	208935	84.13%	78.24%	7th
	Parbat	146962	136675	113464	83.02%	77.21%	7th
	Myagdi	112439	104568	94693	90.56%	84.22%	7th
	Baglung	273614	254461	214170	84.17%	78.27%	7th
	Lamjung	168652	156846	127740	81.44%	75.74%	7th
	Banke	533874	496503	348921	70.28%	65.36%	6th
	Bhojpur	172098	160051	121640	76.00%	70.68%	6th
	Dang	587924	546769	335405	61.34%	57.05%	6th
	Okhaldhunga	148812	138395	96146	69.47%	64.61%	6th
	Rolpa	228507	212512	176057	82.85%	77.05%	6th
	Rukum	215151	200090	195913	97.91%	91.06%	6th
	Salyan	252691	235003	187879	79.95%	74.35%	6th
	Saptari	664906	618363	595727	96.34%	89.60%	6th
	Siraha	660594	614352	482831	78.59%	73.09%	6th
	Udayapur	331436	308235	243580	79.02%	73.49%	6th
	Dhankuta	166393	154745	107031	69.17%	64.32%	5th
	Illam	298346	277462	233014	83.98%	78.10%	5th
	Jhapa	855600	795708	535476	67.30%	62.58%	5th
	Morang	1014212	943217	718375	76.16%	70.83%	5th
	Panchthar	193593	180041	136665	75.91%	70.59%	5th
	Sunsari	819591	762220	547329	71.81%	66.78%	5th
	Tehrathum	101209	94124	67069	71.26%	66.27%	5th
	Bardiya	446466	415213	339324	81.72%	76.00%	5th
	Jajarkot	179786	167201	146481	87.61%	81.48%	5th
	Surkhet	375170	348908	303994	87.13%	81.03%	5th
	Dailekh	273636	254481	229821	90.31%	83.99%	4th
	Achham	266763	248090	218130	87.92%	81.77%	4th
	Baitadi	255775	237871	191250	80.40%	74.77%	4th
	Bajhang	203713	189453	169035	89.22%	82.98%	4th
	Bajura	141652	131736	124284	94.34%	87.74%	4th
	Dadeldhura	147731	137390	117800	85.74%	79.74%	4th
	Darchula	137100	127503	96823	75.94%	70.62%	4th
Doti	211276	196487	165414	84.19%	78.29%	4th	
Kailali	839390	780633	583084	74.69%	69.47%	4th	
Kanchanpur	479952	446355	407008	91.18%	84.80%	4th	
<b>Total - National</b>	<b>12172064</b>	<b>11320020</b>	<b>8980508</b>	<b>79.3%</b>	<b>73.78%</b>		

		<b>30 districts</b>					
<b>2017</b>	Kapilbastu	600296	558275	475961	85.26%	79.29%	9th
	Lalitpur (Rural)	213586	198635	137936	69.44%	64.58%	8th
	Parbat	154099	143312	114709	80.04%	74.44%	8th
	Myagdi	110134	102425	97240	94.94%	88.29%	8th
	Baglung	278244	258767	224263	86.67%	80.60%	8th
	Lamjung	142110	132162	120806	91.41%	85.01%	8th
	Banke	570290	530370	382963	72.21%	67.15%	7th
	Bhojpur	167058	155364	113444	73.02%	67.91%	7th
	Dang	561167	521885	407826	78.14%	72.67%	7th
	Udayapur	323450	300809	219951	73.12%	68.00%	7th
	Dhankuta	152974	142266	106994	75.21%	69.94%	6th
	Illam	295181	274518	235653	85.84%	79.83%	6th
	Jhapa	885024	823072	602634	73.22%	68.09%	6th
	Morang	1043450	970409	754089	77.71%	72.27%	6th
	Panchthar	184429	171519	134160	78.22%	72.74%	6th
	Sunsari	824734	767003	533842	69.60%	64.73%	6th
	Tehrathum	101368	94272	70839	75.14%	69.88%	6th
	Bardiya	460471	428238	352888	82.40%	76.64%	6th
	Jajarkot	181689	168971	146571	86.74%	80.67%	6th
	Surkhet	373013	346902	303372	87.45%	81.33%	6th
	Dailekh	291896	271463	228221	84.07%	78.19%	5th
	Achham	242681	225693	210133	93.11%	86.59%	5th
	Baitadi	279782	260197	205685	79.05%	73.52%	5th
	Bajhang	212429	197559	161600	81.80%	76.07%	5th
	Bajura	163117	151699	124764	82.24%	76.49%	5th
	Dadeldhura	164534	153017	113740	74.33%	69.13%	5th
	Darchula	149480	139016	106624	76.70%	71.33%	5th
	Doti	237416	220797	168983	76.53%	71.18%	5th
	Kailali	905246	841879	625223	74.27%	69.07%	5th
	Kanchanpur	566685	527017	385586	73.16%	68.04%	5th
<b>Total - National</b>		<b>10,836,033</b>	<b>10,077,511</b>	<b>7,866,700</b>	<b>78.1%</b>	<b>72.60%</b>	

2018	24 districts						
	Kapilbastu	642475	597502	460253	77.03%	71.64%	10th
	Parbat	148267	137888	108092	78.39%	72.90%	9th
	Baglung	279979	260380	224263	86.13%	80.10%	9th
	Lamjung	171105	159128	113886	71.57%	66.56%	9th
	Banke	574936	534690	378835	70.85%	65.89%	8th
	Bhojpur	163711	152251	120021	78.83%	73.31%	8th
	Dang	622571	578991	449184	77.58%	72.15%	8th
	Udayapur	345889	321677	216810	67.40%	62.68%	8th
	Dhankuta	154677	143850	101913	70.85%	65.89%	7th
	Illam	306381	284934	243987	85.63%	79.64%	7th
	Jhapa	895419	832740	584837	70.23%	65.31%	7th
	Morang	1058985	984856	630542	64.02%	59.54%	7th
	Panchthar	182676	169889	118442	69.72%	64.84%	7th
	Bardiya	465746	433144	341698	78.89%	73.37%	7th
	Dailekh	288013	267852	225894	84.34%	78.43%	6th
	Achham	279752	260169	207699	79.83%	74.24%	6th
	Baitadi	262525	244148	200174	81.99%	76.25%	6th
	Bajhang	214795	199759	159506	79.85%	74.26%	6th
	Bajura	149938	139442	119361	85.60%	79.61%	6th
	Dadeldhura	154136	143346	117041	81.65%	75.93%	6th
	Darchula	141606	131694	108692	82.53%	76.76%	6th
	Doti	213597	198645	174550	87.87%	81.72%	6th
	Kailali	901177	838095	627410	74.86%	69.62%	6th
Kanchanpur	508150	472580	391242	82.79%	76.99%	6th	
<b>Total - National</b>	<b>9,126,506</b>	<b>8,487,651</b>	<b>6,424,332</b>	<b>75.7%</b>	<b>70.39%</b>		

**Annex 6: List of Participants of 13<sup>th</sup> Technical Working Group Meeting**

SN	Name	DESIGNATION	Organization
1	Mr. Mahendra Prasad Shrestha	Chief	MoHP (PPICD)
2	Dr. Ramesh Kumar Kharel	Director	DoHS, LMD
3	Dr. Kedar P. Cenitury	Director	DoHS, EDCD
4	Dr. Hemanta Chandra Ojha	Section Chief	Vector Born Disease Control Section, EDCD
5	Mr. Narayan Prasad Khanal	Senior Divisional Engineer	Department of Water Supply and Sewerage
6	Mr. Mukunda Raj Gautam	Section Chief	Nutrition Section, CHD
7	Ms. Basundhara Sharma	Senior Public Health Officer	Nutrition Section, CHD
8	Mr. Hira Baral	Coordinator	NTD Secretariat, MoHP
9	Mr. Sailesh Mishra	Executive Director	Nepal Netra Jyoti Sangh
10	Mr. Shekhar Sharma	Manager	Nepal Netra Jyoti Sangh
11	Dr. Deepshikha Rana	NTD Coordinator	WHO Nepal
12	DP Raman	RPA	RTI/ENVISION
13	Achut Babu Ojha	Program Manager	RTI/ENVISION
14	Sudip Raj Khatiwada	M&E Coordinator	RTI/ENVISION
15	Rajeep Maharjan	Admin Assistant	RTI/ENVISION

**Annex 7: Results of Pre TAS & TAS**

S.No	Districts	EU	Pre-TAS prevalence (SS vs SC) = Overall prevalence	Re pre TAS/Pre-re TAS prevalence (SS vs SC) = Overall prevalence	No of Positive/Critical cut off Prevalence	No of Positive/Critical cut off Re- TAS I	No of Positive/Critical cut off TAS II Prevalence	No of Positive/Critical cut off TAS III Prevalence	Remarks
1	Parsa		NO Pre TAS Strategy by WHO						
2	Makwanpur	1	NO Pre TAS Strategy by WHO		1/16 (0.07%)		3/20 (0.18%)	3/20 (0.17%)	
3	Chitwan		NO Pre TAS Strategy by WHO						
4	Nawalparasi	2	NO Pre TAS Strategy by WHO		10/16 (0.68%)		8/20 (0.47%)	5/20 (0.29%)	
5	Rupandehi		NO Pre TAS Strategy by WHO						
6	Kapilbastu	3	1.66/0 = 0.83	14.85/12.88=13.86 (Repeated Pre TAS after failing TAS1)	77/20 (4.5%)				Failed TAS I and then again failed Pre re TAS
7	Bara	4	0/0 = 0		20/20 (1.2%)		21/20 (1.2%)		
8	Rautahat		0/0 = 0						
9	Sarlahi	5	0/0 = 0		6/20 (0.4%)		10/20 (0.6%)		
10	Dhading		0.33/0.33 = 0.33						
11	Nuwakot	6	0.67/0 = 0.33		14/20 (0.8%)		7/20 (0.41%)		
12	Kavrepalanchowk		0/0 = 0						
13	Dhanusha		0/0 = 0						
14	Mahottari	7	0/0 = 0		10/20 (0.6%)		11/20 (0.7%)		
15	Sindhuli		0/0 = 0						
16	Ramechhap	8	0/0 = 0		5/18 (0.3%)		1/18 (0.1%)		
17	Sindhupalchowk		0/0 = 0						
18	Palpa		0/0 = 0						
19	Tanahun	9	0/0 = 0						
20	Syangja		0/0 = 0		8/20 (0.5%)		1/20 (0.1%)		
21	Gorkha		0/0 = 0						
22	Kathmandu Urban	10	0.33/0.6 = 0.55		8/18 (0.5%)				
23	Kathmandu Rural	11	0.33/0.6 = 0.55		4/18 (0.25%)				
24	Lalitpur Urban	12	0.66/0.93 = 0.83		6/18 (0.37%) - urban				
25	Lalitpur-Rural	13	0.66/3 = 1.67	0/0 = 0	1/18 (0.05%) - rural				Rural failed Pre TAS and later passed Re Pre TAS.
26	Bhaktapur	14	0/0.11 = 0.08		2/18 (0.13%)				







