

**MALAWI NTD MASTER  
2015-2020**

**NOVEMEBER 2014**

**NEGLECTED TROPICAL  
DISEASES (NTD)  
PROGRAMME**



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# ACRONYMS

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ALB	Albendazole
AFRO	Africa Region of the World Health Organization
APOC	African Programme for Onchocerciasis Control
CDD	Community Drug Distributor
CDTI	Community Directed Treatment with Ivermectin
CHANGES	Community Health and Nutrition, Gender and Education Support
CHDs	Child Health Days
CHW	Community Health Worker
CM	Case Management (NTDs)
ComDT	Community Directed Treatment
DALYs	Disability Adjusted Life Years
DEC	Diethyl carbamazine Citrate, an anti-filarial drug
DFMO	DL - alpha-difluoro-methyl-ornithine (Eflornithine), a trypanocidal drug
DHT	District Health Team
GDP	Gross Domestic Product
GNP	Gross National Product
GPELF	Global Programme for Elimination of Lymphatic Filariasis
GWE	Guinea Worm Eradication
HAT	Human African Trypanosomiasis
HIV	Human Immunodeficiency Virus
HSSP	Health Sector Strategic Plan
IDSR	Integrated Diseases Surveillance and Response
IEC	Information Education and Communication
IRS	Indoor Residual Spraying
ITNs	Insecticide Treated Nets
IU	Implementation Unit
LF	Lymphatic Filariasis
LFE	Lymphatic Filariasis Elimination
MADP	Mectizan Albendazole Donation Programme
MBD	Mebendazole
MDA	Mass Drug Administration
Mectizan	An anti-filarial drug donated by Merck & Co. Inc.
NGDO	Non Governmental Development Organization
NGO	Non-governmental Organization
NTD/NTDs	Neglected Tropical Disease or Diseases
OCP	Onchocerciasis Control Programmes elsewhere in Africa
PCT	Preventive Chemotherapy (NTDs)

PELF	Programme for Elimination of Lymphatic Filariasis
PHC	Primary Health Care
PZQ	Praziquantel
SAC	School age children
SCI	<b>Schistosomiasis Control Initiative</b>
SAEs	Severe Adverse Events
SSTH	Schistosomiasis and Soil Transmitted Helminthiasis
STH	Soil Transmitted Helminthiasis
TDR	Special Programme for Tropical Diseases Research
UNDP	United Nations Development Programme
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization of the United Nations

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# INTRODUCTION

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## FOREWORD

The National Multiyear Strategic Plan of Action for Control of Neglected Tropical Diseases (NTDs) has been developed in line with the Ministry of Health's vision to transform Malawi into a nation free from NTDs by 2020 with regard to the Millennium Development Goals (MDGs). The strategy aims at guiding the implementation of NTDs in an integrated way to maximize on benefits. It is a product of extensive consultations with partners and stakeholders. This National Multi-year Strategic Plan of Action for Control of Neglected Tropical Diseases comes at a time when there is global goodwill for control of NTDs. As such it is my hope that all stakeholders will play their respective roles and responsibilities in supporting the implementation of this Multi-year Strategic plan.

In Malawi, there are eight NTDs that are known to be endemic. These include Schistosomiasis (bilharzia), Soil Transmitted Helminthiasis, Lymphatic Filariasis (Elephantiasis), Trachoma, Human African Trypanosomiasis (Sleeping sickness, Leprosy and Skin Diseases and Onchocerciasis (River Blindness). These diseases constitute serious impediment to socioeconomic development and quality of life. NTDs have enormous impact on individuals, families and communities in terms of disease burden, loss of productivity and the aggravation of poverty and high cost of long term care. NTDs cause disfigurement and disability leading to stigma and social discrimination.

The commitment of the Government of Malawi is to uplift the socioeconomic status of all her citizens as clearly articulated in vision 2020. In compliance with this national vision, the MOH will spearhead the implementation of the National Multi-year Strategic Plan of Action for Control of Neglected Tropical Diseases with the goal of making Malawi free from NTDs through implementation of WHO recommended public health strategies for prevention and control of NTDs. These include Preventive chemotherapy, Case management, Vector control, Provision of Safe water, Sanitation and Hygiene and Veterinary public health. Evidence suggests that more effective control results are achieved when all five approaches are combined and delivered. The Ministry will therefore mobilize development partners (sector wide approach) to raise the resources needed for the realization of the goals of the country plan.

The Ministry in collaboration with stakeholders will put in place a system for supervision, monitoring and evaluation of all programme activities. All sector partners including local communities will be involved in raising awareness through concerted Health Promotion and Education (HPE) strategies.

It is my expectation that this comprehensive NTD control plan will be a major step towards the goal of eliminating NTDs in Malawi and I urge all stakeholders to put all their efforts into its implementation to enable the country to achieve its vision of a nation free of NTDs.

Signed  
Hon. Jean Kalilani, MP  
**Minister of Health**

## **ACKNOWLEDGEMENT**

The updating of this master plan for the years 2015-2020 was a consultative process involving WHO consultants and stakeholders in Neglected Tropical Diseases (NTDs) marked the development of this NTD strategy. On behalf of the Ministry, I would like to thank the Dr S. Kabuluzi , the Director of Preventive Health Services for providing policy guidance and technical directions. Special thanks go to the World Health Organization (WHO) Country Representative for facilitating the work of consultants and other experts who assisted in the development of this NTD strategy and plan. Dr Impouma Benido, NTD Programme Coordinator, WHO Regional office, Ms Jilet Ochienghs, NTD Coordination and Advocacy Officer IST Team, WHO East and Southern Africa; Dr James Mwansa from University of Zambia who was assigned by WHO as Malawi's NTD team external consultants and facilitator in the development of this NTD Strategy and Plan. Many thanks also go Niels Ornbjerg(DSc) for the Centre for Health Research and Development, University of Copenhagen for sponsoring the first stake holders meeting. I would also like to thank all the stakeholders who attended the first stakeholders meeting for their valuable contributions and in the same vein thank the following for their dedication to the development of the Strategic Plan. Dr Kelias Msyamboza the DPC Officer, in WHO Malawi office; Mr Roy Hauya, Country Director Sightsavers Malawi, Mr Bright Benson Chiwaula, Senior Programmes Officer, Sightsavers; Mr Leonard R.B.K.Mawaya, Leprosy and Skin Diseases Control Programme Manager, Buruli/Leishmaniasis Control Programmes, Mr. Samuel Jemu , Schistosomiasis and Soil Transmitted Transmitted Helminthiasis Control Programme Manager, Mr Marshal Lemerani, Human African Trypanosomiasis Control Program Manager (HAT), Mr Square Mkwanda, Lymphatic Filariasis Control programme Manager, Mr Laston Sitima, Onchocerciasis Control Programme Manager, and Mr Michael Masika and Trachoma Control Programme Manager.

Signed

Chris Kang'ombe

**SECRETARY FOR HEALTH**

## **PREFACE**

The National Multiyear Strategic Plan of Action for Control of Neglected Tropical Diseases (NTDs) covers the period 2015 – 2020 . This document has been developed in line with the Ministry of Health’s vision to transform Malawi into a nation free from NTDs by 2020 with regard to the Global and regional strategic plan for NTD 2014-2020. The Multi- year strategy has been developed with the guidance of WHO consultants. The staff of Ministry of Health from the Department of Preventive Health Services was key in the development of the plan with in –puts from stake holders and partners from World health organization (WHO) and Sight savers.

Previously NTDs prevention and control in the country have been implemented as vertical programmes without a common plan of action. This national plan of action which promotes integrated approach is therefore designed to accelerate the implementation of NTDs prevention and control activities in a coordinated manner in the country. A guide to develop Multi-year Strategic Plan of Action was developed by WHO for national NTDs programmes for the Africa Region in order to standardize and have a common approach to the prevention and control of NTDs on the continent, as diseases know no borders. To this end strategic priorities and objectives were developed. Thus this Multi-year Strategic Plan of Action will aid the Ministry of Health in advocating for increased resource mobilization and partnership involvement in its implementation. The Plan’s outcomes shall be widely shared and disseminated among all stakeholders and development partners. It is envisaged that by 2020 all the NTDs in Malawi will be eliminated.

Signed

Dr Storn Kabuluzi

**Director of Preventive Health Services**

## INTRODUCTION

Most countries in the African Region of WHO are burdened by endemic and epidemic tropical parasitic diseases. Diseases such as malaria, Lymphatic Filariasis (LF), Onchocerciasis, Schistosomiasis, Soil Transmitted Helminthes (STH), Guinea Worm, Leishmaniasis, Human African Trypanosomiasis, Leprosy, Trachoma, Rabies, Buruli Ulcer and many others. All these diseases apart from malaria are referred to as neglected tropical diseases (NTDs). Malaria is being addressed on a global scale by initiatives such as Roll Back Malaria (RBM) using funding from various sources including the Global Fund. Guinea Worm has almost been eradicated. The rest of the neglected diseases constitute a group that has not attracted much attention in terms of funding for research and or control. However, there are now available interventions that are fairly cheap and effective and offer opportunities for controlling or even eliminating some of these diseases as public health problems. Besides, drugs for treating some of these parasitic infections are donated to the programme by the pharmaceutical companies. In some cases, the strategies used for the control/elimination of onchocerciasis and LF are similar or the same. For example, the strategies for controlling onchocerciasis and eliminating Lymphatic Filariasis are very similar, relying on the use of the same drug (Ivermectin / Mectizan®) administered on a massive scale through Community Directed Treatment (ComDT). In the case of Lymphatic Filariasis, albendazole has been added to be co-administered with ivermectin. Both these drugs have been offered free for as long as required. Schistosomiasis now has an effective and cheap drug praziquantel. When combined with albendazole, praziquantel is capable of preventing severe pathology that could have developed due to infection with schistosomes and STH.

Many poor rural communities in tropical Africa live in areas endemic for two or more of these neglected diseases. Often, their control and or elimination programmes are vertical but implemented by the same health workers especially at the lower administrative levels (Districts, Wards, Communities). These health workers have to visit the same communities several times in a year to deliver each of the interventions. Malawi is not an exception to this. It is endemic for most of the neglected diseases mentioned above and to which several programmes have been set up and new ones planned to control neglected diseases. It has however been realized that integration of these programmes has many advantages, amongst which are encouraging collaboration between vertical programmes, integrated implementation at lower levels, rational and efficient use of human and financial resources, savings on time of implementers and beneficiaries, synergistic impact on the targeted parasitic diseases where these are co endemic and strengthening of health services delivery systems. Integrated programmes are also easier to sustain as financial, human and other resources are shared.

Integration is particularly important at this time of dwindling resources from donor nations and agencies. Malawi is therefore proposing to integrate the implementation of some disease control / elimination programmes, as other countries are doing by starting with Onchocerciasis, Schistosomiasis, Trachoma and Lymphatic Filariasis. The plan presented here is for the integration of some key aspects in those disease control programmes.

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## PART ONE 1: SITUATION ANALYSIS

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## 1.1. COUNTRY PROFILE

### 1.1.1. Geography and Climate

Malawi is a landlocked country in southeastern Africa. The country shares borders to the north and northeast with Tanzania, to the Southeast, South and southwest with Mozambique and to the west with Zambia. It is located to the south of the equator, in Sub-Saharan Africa, lying in the southern end of the Great East African Rift Valley. It lies between latitudes 09° 25'S and 17° 08'S and longitudes 32 ° 40'E and 35 ° 55'E. The country is about 901 kilometers long. Its width ranges from 80 to 161 kilometers. Malawi has a total area of 11.8 million hectares of which 9.4 million hectares is land and the rest covered with water. The major water body in the country is Lake Malawi, which is to the southernmost of the Rift Valley with total surface area of more than 30,000 square kilometers. The lake is third largest in Africa and the eighth largest freshwater body in the world and is shared by Malawi, Mozambique and Tanzania. It has been established that the lake harbors more fish species, over 500, than any other lake in the world. The geography of Lake Malawi reflects its situation in the great African rift valley system, characterized by being a long, relatively narrow, and deep water-body. It is the ninth largest lake by surface area, but stands as the fourth deepest and also fourth largest body of freshwater on the globe.

The catchment area of Lake Malawi, where the six drainage basins are located, comprise of the inland ancient plateaus of Nyika which is 2500 metres above sea level and Viphya with thickly forested slopes both in the Northern Region and Zomba in the Shire highlands of the Southern Region. The catchment area is also associated with mountains such as Mulanje Mountain with 3000 metres above sea level, rift valley escarpment, and the lakeshore flood-plains.

The drainage basins are dominated by metamorphic and igneous gneiss, schist and granite. The vegetation of the six drainage basis is predominantly a mixture of woodlands (evergreen, *Brachystegia* woodland, etc.). Most of the gentler slopes are under cultivation. It is mostly the hillsides that are forest covered. Forest resources are generally declining (47% to 28% between 1975 and 2000) due to deforestation. The national average deforestation rate in Malawi is 2.8% per year.

The country can be roughly divided into four major physiographic classes (Pike and Remington, 1965): These can further be subdivided into 15 classes (fig 4.2 refers). The four classes include: the high-altitude plateaus, the medium-altitude plain, the Lakeshore plain and the lower Shire valley. The high-altitude plateaus consist of a number of isolated mountains such as Mulanje, Dedza, Zomba, the Nyika and the Vipya (altitude 1 350 to 3 000 meters). Topography varies from precipitous to undulating, and the soils are mostly lithosols and highly leached latosols. The medium-altitude plain occupies more than 75 per cent of the land surface (altitude 750 to 1 300 meters). The topography is flat to rolling with deep well-drained latosols on the upland sites and poorly drained hydromorphic soils on the lowland sites commonly known as "dambos". The Lakeshore plain lies along Lake Malawi (altitude 450 to 600 meters). This area is characterized by flat to gently undulating plains. The soils are mostly deep, calcimorphic alluvials and colluvials, with some hydromorphic soils in isolated depressions. The lower Shire valley is a wide rift valley (altitude 35 to 105 meters) and its soils are mostly calcimorphic alluvials with some extensive areas dominated by hydromorphic soils and vertisols (Msiska, 2001).

### 1.1.2. Climate

The country has two main distinct seasons: the rainy season from November to April and the dry season from May to October. The rainy season is hot and humid while the rest of the year is mainly dry and cool.

Malawi, in view of the large lake, high plateau and rugged relief has a distinct climate. The country experiences good rainfall during the rainy season from November to April with an annual mean of 1,037mm. The mean monthly temperatures range from 10 to 16 degrees Celsius in highland areas, 20 degree Celsius to 29 degrees Celsius along the lakeshore areas. In addition to the lakes, the country has a good network of river systems, divided into 17 Water Resources Areas (WRA) with each WRA pertaining to a river basin. Some rivers are perennial and others are seasonal.

Malawi's climate is semi-arid in the lower Shire Valley and parts of the Lakeshore, semi-arid to sub-humid in the medium -altitude plain and sub-humid to humid in the high-altitude plateaus. With altered topographic and soil characteristics due to leaching the climate of different areas is likely to change resulting into altering the habitat and thereby creating breeding space for some vectors in areas that were not associated with such vectors previously. That change affects the health status of the inhabitants.

In Malawi, the annual average rainfall varies from 725mm to 2,500mm with Lilongwe having an average of 900mm, Blantyre 1,127mm, Mzuzu 1,289mm and Zomba 1,433mm (Munthali 2007). Extreme conditions include the drought that occurred in 1991/92 season and floods of 1988/89 seasons. The low-lying areas in Malawi such as Lower Shire Valley and some localities in Karonga, Nkhata-Bay and Salima District are more vulnerable to floods than higher grounds.

The two main rain bearing systems during the rainy season are the Inter-Tropical Convergence Zone (ITCZ) and the Congo Air mass. The deficiency in rainfall may occur if these systems are not active in the season. The other weather features that affect Malawi include anticyclones, easterly waves and occasionally tropical cyclones. The rainfall regime is greatly influenced by the great variation in altitude and the proximity to the huge lake that covers two thirds of the length of the country. The annual average rainfall varies from around 700mm in low lying areas such as Shire Valley in Southern Malawi to over 2000mm over highlands and lake shore areas. Rainfall over Malawi shows a high degree of inter and intra seasonal variability.

Malawi experiences periods of dry or wet of varying lengths ranging from days to years. The country is affected by extreme climate events such as drought, floods, strong winds, and landslides. These events adversely affect food production systems resulting in famine, human health, damaged infrastructures, and migration of the indigenous population. The low-lying areas such as Lower Shire Valley and some Localities in Karonga, Nkhata-Bay and Salima are more vulnerable to floods than higher grounds areas of Mzimba, Kasungu, Lilongwe, Dedza parts of Shire Highlands (Munthali et al 2004 in Munthali 2007). The evidence of climate variability in Malawi is manifested in significant variations in levels in Lake Malawi and river levels. Sudden drop of water levels in Lakes Malawi and Chilwa; Shire River is evidence of climate variability. The severe droughts of 1991/92, 1993/94; 1994/1995 and 1999/2000 could have contributed significantly to the lowering of the lake levels. The resulting and continued lack of outflow at lake levels above the datum and threshold of the outlet flows was blamed on channel blockage. The vegetation overgrowth and piling of sedimentation from small tributaries near the lake blocked water flow (Calder et al. 1995 in Munthali 2007).

A cool, dry winter season is evident from May to August with mean temperatures varying between 17 and 27 degrees Celsius, with temperatures falling between 4 and 10 degrees Celsius. In addition, frost may occur in isolated areas in June and July. A hot, dry season lasts from September to October with average temperatures varying between 25 and 37 degrees Celsius. Humidity ranges from 50% to 87% for the drier months of September/October and wetter months of January/February respectively (Munthali 2007).

There is evidence to show that variability in temperature also exists in Malawi. Temperatures are generally increasing over the country though in small values in some areas. As observed earlier, rainfall and temperature indicate increased frequency of extreme events such as floods and drought. Places that were not affected by extreme weather conditions are now being affected. This shows that there are changes in the characteristics of weather systems that bring rainfall into Malawi. Increasing and decreasing trends have been identified in rainfall in different areas. For example, records at Bvumbwe Research Station in Thyolo District show the evidence of the increasing trends of temperature, in addition to other research stations where such records exist.



### 1.1.3. Administrative structure, demography and Community Structure

#### 1.1.3.1. Administrative Organization

The country is divided into 3 administrative regions namely the northern, central and southern regions. The country has 28 districts and 29 health districts. Each district is headed by a District Commissioner. A district is further divided into traditional authorities (TAs) which are ruled by chiefs. The village is the smallest administrative unit in Malawi and falls under TAs.

The Health sector is divided into five zones 2 of which are in southern and 2 in central regions respectively while 1 is in the Northern region, the Zone Officer is the person in charge of the zone which is comprised of several district hospitals whose in charges are District Health Officers. In some villages there are village health committees (VHCs) whose responsibility is to work with Health Surveillance Assistants (HSAs) on health issues at village level. HSAs are the lowest cadre employed by the Ministry of Health (MoH) and are resident within communities but attached to a health facility and they constitute a link between the community and the health centre. A group village headman (GVH) oversees several villages. There is a Village Development Committee (VDC) at GVH level which is responsible for development activities. Development activities at the higher TA level are coordinated by the Area Development Committee (ADC). Politically, the district is further divided into constituencies which are represented by members of parliament and in some cases these constituencies can combine two TAs.

#### 1.1.4. Population and Demography

In 2008 Malawi's population was estimated at 13.1 million and with an annual growth rate of 2.8%, the population is estimated at 15.8 million in 2014<sup>1</sup>. This high growth is predominantly due to the high total fertility rate of 5.0 and low contraceptive prevalence rates of around 57.4%<sup>2</sup>. Almost half of the population is under 15 years of age, and the dependence ratio has risen from 0.92 in 1966 to 1.04 in 2008<sup>3</sup>. Malawi is one of the most densely populated countries in Africa. The proportion of Malawi's population residing in urban areas is estimated at 15.3% while the rest live in rural areas. Over the years population density for Malawi has been on the increase: it was at 85 persons per km<sup>2</sup> in 1987 then 105 in 1998 and then in 2008 it was at 139 persons per km<sup>2</sup> with the southern region having the highest population density at 184 persons per km<sup>2</sup>. The 2008 population and housing census also found that about 7% of the population in Malawi is comprised of infants aged less than 1 year, 22% were under-fives, and about 46% were aged 18 years and above. Malawi is predominantly a Christian country (80%). Muslims constitute about 13% of the population and the remainder are others. The literacy rate for women is lower at 59% compared to males at 69%<sup>4</sup>. Malawi enjoys a rich cultural diversity which in turn impacts on the lives of its people including the way they seek treatment and acceptance of new development in the field of agriculture, health and education among other sectors.

<sup>1</sup> National Statistical Office. (2009). *Malawi housing and population census 2008*. Zomba: National Statistical Office.

<sup>2</sup> National Statistical Office. (2014). *Malawi MDG Endline Survey 2014, Key Findings*. Zomba, Malawi: National Statistical Office.

<sup>3</sup> National Statistical Office. (2009). *Malawi housing and population census 2008*. Zomba: National Statistical Office.

<sup>4</sup> National Statistical Office. (2009). *Malawi housing and population census 2008*. Zomba: National Statistical Office.

Estimated life expectancy at birth in Malawi is at 47.59 years (2008). Infant mortality rate is 74.68 per 1000 live births. Under-five mortality rate is 133 per 1000 live birth. Maternal mortality rate is 984 per 100,000 live births (DHS 2004). About 49 % of children under-five years of age are chronically malnourished. The literacy rate is low < 50% and amongst females is about 32%. The majority of the population (88%) lives in rural areas. There are over 20 tribes in Malawi. However, Chichewa and English are two national languages.

A summary of the population distribution by district and sex is shown in Table 1.

Province / Region	District	No. of villages / communities *	Total Population	Under fives	5-14 years	No. Primary schools	No. Hospitals (Government, CHAM, and other Hospitals)	No Health Centres and Community/Rural Hospitals
Southern	Balaka	761	383,887	62,057	108,515	157	11	
	Machinga	897	589709	97,499	170,491	158	20	
	Mangochi	804	982058	159,761	279,364	272	37	
	Zomba	2185	779259	130,671	228,496	223	28	
	Nsanje	720	274797	46,373	81,090	106	22	
	Thyolo	416	633019	115,770	202,440	199	24	
	Mwanza	118	102571	19,504	34,106	49	4	
	Neno	138	143824	22,352	39,085	70	10	
	Chikhwawa	552	518287	85,485	149,482	175	20	
	Chiradzulu	698	314059	56,668	99,092	88	12	
Central	Phalombe	502	364282	62,818	109,846	91	13	
	Blantyre	627	1239647	195,236	341,397	289	22	
	Mulanje	584	564976	102,339	178,954	163	22	
	Dowa	3925	732343	111,643	195,223	237	21	
	Nkhotakota	650	367776	60,013	104,941	153	19	
	Salima	1014	407148	68,452	119,698	141	15	
	Dedza	2082	718747	122,931	214,961	235	33	

	<b>Kasungu</b>	3804	794991	121,412	212,306	339	20	
	<b>Ntchisi</b>	1200	276481	44,813	78,361	142	11	
	<b>Mchinji</b>	1356	569085	92,634	161,982	196	13	
	<b>Lilongwe</b>	10080	2400234	385,220	673,610	544	45	
	<b>Ntcheu</b>	964	557433	93,503	163,503	238	33	
<b>Northern</b>	<b>Karonga</b>	347	327084	55,348	96,783	167	15	
	<b>Rumphi</b>	431	203053	33,621	58,790	188	20	
	<b>Mzimba North</b>	2151	1078296	172,660	301,919	608	60	
	<b>Nkhatabay</b>	411	260583	42,377	74,101	188	19	
	<b>Likoma</b>	12	<b>10441</b>	2,065	3,610	10	2	
	<b>Chitipa</b>	400	211170	36,333	63,533	174	9	
<b>Total</b>	<b>28</b>	<b>37,829</b>	<b>15805240</b>	<b>2,599,560</b>	<b>4,545,678</b>	<b>5,392</b>	<b>562</b>	

### 1.1.5. Socio-Economic Situation and indicators

Malawi is one of the poorest countries in the world. The country is ranked as the ninth poorest country in the world in terms of GDP per capita in 2009 which stands at US\$290. There are serious inequities in the distribution of income in Malawi (has a Gini coefficient of 0.42). Poverty levels are high: in 2009 the proportion of the population described as poor was estimated at 39% a drop from 52% and 40% in 2004 and 2008, respectively. Forty three percent of the rural population are poor while in urban areas the proportion is at 14%<sup>5</sup>. Malawi is predominantly an agricultural country. The agricultural sector, however, is highly vulnerable to adverse weather conditions as Malawi experience for example in 2002/2003. Agriculture accounts for about 35% of GDP, 93% of export earnings (primarily tobacco), and provides more than 80% of employment. Manufacturing accounts for only around 10% of GDP, industry for 20% and services the remainder<sup>6</sup>. Malawi has a small formal sector. In 2005, only about 14% of the labour force was employed in formal sector, and only 18.5% of these were women. The Civil service is the largest employer in Malawi in particular the health and education sectors. The private sector, however, has not grown much.

The sources of revenue from which public services are funded are mainly taxes on personal income and company profits, trade taxes and grants from donors. In the event of insufficient revenue to cover the budgeted expenditure, the financing of the resultant deficit is met either from the domestic bank and non-bank sources, or from foreign financing in a form donor and overseas banks loans. In this scenario therefore,

<sup>5</sup> National Statistical Office. (2009). *Welfare monitoring survey 2009*. Zomba: National Statistical Office.

<sup>6</sup> Source.

it is evident that the financing of public services in Malawi is inextricably linked to the aggregate of each of these revenue sources. For instance, in the 2008/09 financial year, the major public sector sources of finance contributed in the following proportions: domestic taxes had a share of 77.9% and trade taxes had a share of 10.1%, while non-tax revenue was 12.0%<sup>7</sup> (Malawi Government 2010). These revenues represented 24.5% of GDP. The functional distribution expenditure from these revenues including grants from donors is presented in Annex 1. It is evident that General Administration had the highest share of recurrent expenditures (33.9%), seconded by Agriculture (18.9%), Education (13.7%) and Health at 10.2%. In terms of development expenditures, Health had the highest expenditures (22.9%), seconded by Transport and Communication services at (22.1%), General Administration came third at 19.9% while Agriculture and Natural Resources came forth at 11.7%. therefore General Administration was the highest consumer of total government revenues (30.7%), Agriculture came second at 17.3%, Health came second at 13.1% and Education came forth at 12.6%<sup>8</sup>. It has generally been known that budgetary allocation to the health sector is inadequate despite the existence of the Abuja Declaration that Governments should allocate 15% of the funds to health. This Programme of Work will, among other things, increase access to health services for the people of Malawi, explore other alternative sustainable sources of funding for example by promoting universal access to social health insurance.

#### **1.1.6. Transport and Communication**

The transport system in Malawi consists of mainly land and water. The road network between districts is fairly good during the dry season. Most districts are connected to each other with tarmac roads and within the districts; there is a network of all-weather roads, however, traveling is a problem during rainy to some of the affected communities. The distances from one district to another are indicated in Annex 2. Presently, telephone services are by landlines and cellular phones. There is a substantial network of mobile communication in Malawi, within districts and between districts, though sometimes there could be network problems. Every district is reached by local radio station and cell phone networks. In Malawi, both the rural and urban areas are reached by television network. Communication to communities is feasible through community leaders, local radio stations, mobile phones, health workers, political leaders, religious leaders, community meetings, neighbours, social workers, village health committee, posters, leaflets and interpersonal communication. Therefore, the former communication channels to the communities could be used for NTD disease surveillance and control activities.

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<sup>7</sup> Government of Malawi. (2010).

<sup>8</sup> See Annex I,

Table 2: Distances between major cities and district headquarters

SOUTHERN REGION		CENTRAL REGION		NORTHERN REGION	
From Blantyre to:		From Lilongwe to:		Distance from Mzuzu to:	
Bangula	<b>124km</b>	Blantyre	<b>311km</b>	Bandawe	<b>102km</b>
Chikhwawa	<b>54km</b>	Dedza	<b>84km</b>	Blantyre	<b>676km</b>
Fort Lister	<b>93km</b>	Dwangwa via Salima	<b>254km</b>	Chintheche	<b>86km</b>
Kapichira Falls	<b>72km</b>	Kasungu	<b>127km</b>	Chitipa via Karonga	<b>327km</b>
Lengwe Nat Park	<b>74km</b>	Kasungu Nat Park	<b>202km</b>	Karonga	<b>226km</b>
Liwonde	<b>120km</b>	Mchinji	<b>109km</b>	Lilongwe	<b>367km</b>
Mangochi	<b>185km</b>	Mzuzu	<b>367km</b>	Mzimba	<b>117km</b>
Mfunda Falls	<b>59km</b>	Ntcheu	<b>158km</b>	Nkhata Bay	<b>47km</b>
Mpatamanga	<b>53km</b>	Nkhotakota via KU	<b>200km</b>	Nyika Nat Park	<b>192km</b>
Mulanje via Thyolo	<b>83km</b>	Nkhotakota via SA	<b>201km</b>	Rumphi	<b>68km</b>
Nsanje	<b>273km</b>	Salima	<b>103km</b>		
Illovo Nchalo	<b>86km</b>	Salima Lakeshore	<b>125km</b>		
Thyolo	<b>39km</b>				
Zomba	<b>59km</b>				

## 1.2. Health system situation in Malawi

In Malawi health care services are delivered by the public and the private sector. The public sector includes all facilities under the MoH, Ministry of Local Government and Rural Development (MoLGRD), the Ministry of Forestry, the Police, Prisons and the Army. The private sector consists of private for profit and private not for profit providers (CHAM). The public sector provides services free of charge while the private sector charges user fees for its services.

### 1.2.1. Health system goals and priorities

The MoH headquarters is responsible for the development, review and enforcement of health and related policies for the health sector; spearheading sector reforms; regulating the health sector including the private sector; developing and reviewing standards, norms and management protocols for service delivery and ensuring that these are communicated to lower level institutions; planning and mobilizing health resources for the health sector including allocation and management; advising other ministries, departments and agencies on health related issues; providing technical support supervision; coordinating research; and monitoring and evaluation. Even though the Reproductive health Unit, the Health education Unit, the Research Unit, the Community Health Sciences Unit, the National Tuberculosis Program and the HIV Department are not physically at the MoH headquarters, they are part of the central level. The MoH is also responsible for ensuring that its obligations to global initiatives are fulfilled. The MoH established five zonal offices. The role of the Zonal Offices is to provide technical support to District Health Management Teams

(DHMTs) in planning, delivery and monitoring of health service delivery at the district level and facilitation of central hospitals' supervision to districts.

### **1.2.2. Service Delivery**

Malawi's health care delivery system is organized at three levels namely: primary, secondary and tertiary. These different levels are linked to each other through an elaborate referral system that has been established within the health system.

### **1.2.3. Primary level of health care**

This level consists of community initiatives, health posts, dispensaries, maternities, health centres and community and rural hospitals. At community level, health services are provided by community-based cadres such as HSAs, community-based distributing agents (CBDAs), VHCs and other volunteers from NGOs mostly. HSAs provide promotive and preventive health services including HIV testing and counseling (HTC) and provision of immunization services. They are now also involved in community case management of acute respiratory infections (ARIs), diarrhoea and pneumonia among under five children. Services at this level are conducted through door-to-door visitations, village clinics, mobile clinics, or at manned or unmanned health posts.

Community health nurses and other health cadres also provide health services through outreach Programs. VHCs promote PHC activities through community participation and they work with HSAs to promote preventive health services such as hygiene and sanitation. At primary level health centres support HSAs and some health centres have Health Centre Management Committee which ensures that communities receive the services that they expect in terms of quantity and quality through monitoring of performance of health centres in collaboration with VHCs. Health centres are responsible for providing both curative and preventive EHP services<sup>9</sup>.

### **1.2.4. Community hospitals**

Community hospitals are also known as rural hospitals. These facilities provide both primary and secondary care. They have admission facilities with a capacity of 200 to 250 beds.

### **1.2.5. Secondary level**

District hospitals constitute secondary level of health care. They are referral facilities for both health centres and rural hospitals and have an admission capacity of 200 to 300 beds. They also service the local town population offering both in-patient and out-patient services. CHAM hospitals also provide secondary level health care. The provision and management of health services has since been devolved to Local governments following the Decentralization Act (1997). The district or CHAM hospitals provide general services, PHC services and technical supervision to lower units District hospitals also provide in service training for health personnel and other support to community based health Programs in the provision of

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<sup>9</sup> MoH. (2004). *Handbook and guide for health providers on the Essential Health package in Malawi*. Lilongwe: MoH.

EHP. Health services are managed by the DHMT. The DHMT receives direct technical support and supervision from ZHSOs.

### **1.2.6. Tertiary level**

The tertiary level comprises of central Hospitals: these provide specialist referral health services for their respective regions. Specialist hospitals offer very specific services such as obstetrics and gynaecology. There are currently 4 central hospitals namely: Queen Elizabeth in Blantyre, Kamuzu in Lilongwe, Mzuzu in Mzimba and Zomba in Zomba with admission capacities of 1250, 1200, 300 and 450 beds, respectively. Queen Elizabeth and Kamuzu Central Hospitals are also teaching hospitals because of their proximity to College of Medicine and Kamuzu College of Nursing. Central hospitals, however, also provide EHP services which should essentially be delivered by district health services. The CHs are also responsible for professional training, conducting research and providing support to districts. Tertiary care is also provided by Zomba Mental Hospital.

### **1.2.7. The private sector**

The private sector plays an important role in the delivery of health services. At community level, numerous NGOs, FBOs and CBOs deliver promotive health services but the majority of the providers and the services they offer are unknown to MoH and stakeholders. The MoH and stakeholders in the health sector have mainly involved TBAs which were introduced to expand MCH services to the community, while the relationship with traditional healers has been weak. The Malawi Traditional Medicine Policy has since been put together and it will guide the practice of traditional medicine. The health sector will continue to work with traditional healers through the Malawi Traditional Healers Umbrella Organization

CHAM is the biggest partner for the MoH: it provides services and trains health workers through its health training institutions (TIs). It owns 11 out of the 16 TIs in Malawi and most of these are located in rural areas. CHAM facilities charge user fees to cover operational costs and are mostly located in rural areas. The charging of user fees constitutes a major barrier to accessing services for poorest rural people; hence gross inequality to those living in catchment areas of CHAM facilities. GoM heavily subsidizes CHAM by financing some drugs and all local staffing costs in CHAM facilities.

In order to increase access to EHP services, the MoH has encouraged DHOs to sign service level agreements (SLAs) with CHAM and BLM facilities to remove user fees for most vulnerable populations. To date 76 SLAs out of approximately 172 facilities have been signed mainly for the delivery of maternal and newborn health (MNH) services. A few facilities have SLAs for an entire EHP. SLAs involve the transfer of a fee from the DHO to a CHAM facility in exchange for the removal of user fees. Many CHAM SLAs are dormant and contractual conflicts are yet to be resolved. Discussions about the potential inclusion of other sections of the private sector especially for profit health care providers have not started yet<sup>10</sup>. Currently, SLA guidelines with the private sector exist for AIDS and Tuberculosis.

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<sup>10</sup> MoH. (2010). *Final evaluation of the Health Sector Programme of Work I*. Lilongwe: MoH.

### 1.2.8. Universal access

The MoH aims at ensuring that EHP services are available to all Malawians. The signing of the SLAs with CHAM institutions for delivery of MNH services is one way of ensuring that all Malawians regardless of their socio-economic status have access to EHP services. Evidence shows that the removal of user fees in CHAM facilities has resulted into an increase in the number of patients seeking care in these facilities. Universal coverage also looks at geographical coverage: proportion of Malawi's population living within a 5 km radius from a health facility. Mapping of health facilities of health facilities has just been completed. The maps show areas in Malawi which have limited or no health facilities and also where CHAM and other private health facilities are located. While 77 SLAs were signed with CHAM in the PoW, the mapping shows that there will be a need to sign fewer SLAs during the HSSP. The construction of more health facilities helps to increase the proportion of the Malawi's population who live within a 5 km radius of a health facility. In 2004 46% of the population was residing within 5 km of a health facility. The target was that by the end of PoW 100% of Malawi's population should live within a 5 km radius of a health facility.

**Figure 2: The number of health facilities in Malawi 2003-2010**

OWNERSHIP	Number of Facilities in 2003									Number of Facilities in 2012									
	Central Hospital	District Hospital	Mental Hospital	Rural Hospital	Health Centre	Dispensary	Maternity	Rehabilitation C.	TOTAL	Central Hospital	District Hospital	mental hospital	Rural Hospital	Hospital	Health Centre	Dispensary	Maternity	Rehabilitation Unit	TOTAL
CHAM	0	0	1	4	113	18	2	1	139	0	0	1	18	20	109	12	4	1	165
Local Government	0	0	0	0	13	7	13	0	33	0	0	0	0	0	10	7	13	1	31
MOH	4	21	1	15	219	54	2	0	316	4	23	1	18	1	258	54	2	0	361
MOH/ CHAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
MOH/Local Government	0	0	0	0	39	2	0	0	41	0	0	0	1	0	45	4	0	0	50
<b>Total</b>	<b>4</b>	<b>21</b>	<b>2</b>	<b>19</b>	<b>384</b>	<b>81</b>	<b>17</b>	<b>1</b>	<b>529</b>	<b>4</b>	<b>23</b>	<b>2</b>	<b>37</b>	<b>21</b>	<b>423</b>	<b>77</b>	<b>19</b>	<b>2</b>	<b>608</b>

### 1.2.9. Health work force

For health goals to be achieved, adequate numbers of health workers with appropriate training should be available. Malawi suffers from significant shortages in healthcare workers (HCWs). The HRH situation was so critical in 2004 that MoH and stakeholders, developed a six-year Emergency Human Resource Plan (EHRP) to address the problem. With significant vacancies (see Figure below) among priority HCW cadres, particularly nurses, physicians, clinical officers, environmental health officers, laboratory and pharmacy technicians, Malawi's HRH challenges remains both acute and complex.

A number of NTDs occur in the semi-arid and arid areas where health workers ratio is low, health facilities are inadequate and there are frequent shortages of drugs. A lot of improvement will need to be achieved on all fronts especially on staff employment and deployment for there to be an impact on NTDs morbidity reduction. Health surveillance assistants, environmental health officers and nurses are the cadres mainly based at the peripheral health facilities and are the staff to be involved in NTD prevention and control. A policy exists in the ministry for continuous recruitment and deployment for these cadres of staff.

There are still weaknesses in leadership and management of human resources at all levels of the health system, poor and slow recruitment practices and mal- distribution of health workers; majority being in urban areas. The inequitable distribution of human resources particularly affects NTD affected areas that are generally hard-to-reach and hard-to-stay for health workers.

#### **1.2.10. Health Information**

The Health Management Information System (HMIS) is an important source of data on outputs of the health sector, diagnosis of EHP conditions and diseases and other health systems information. This data is available on a monthly, quarterly and annual basis. National Disease summary and data capturing tools (registers) have been designed for capturing majority of the diseases that are reported in the country. Most of the information used in health services delivery is derived from health facilities. However, health and health related information and data generated in the communities are rarely linked with these higher levels. Data and information on one of the NTDs namely intestinal worms is captured using this existing system. However, for the other NTDs that are not captured, the existing data capture and summary tools will be revised to include them.

In addition, the Department of Integrated Disease Surveillance and Response (IDSR) implements the Integrated Disease Surveillance, which is a mechanism devised to record and report on major diseases in the country. The Department carries out surveillance on Diseases of public health importance affecting the Districts including the emerging and re-emerging diseases. This information is collected weekly from Districts. Using the existing system of surveillance, data on NTDs will flow from the health facilities from where it will be passed to the National level and NTDs Co-ordination office.

#### **1.2.11. Drugs and medical supplies**

The MoH has overall responsibility for procurement of public health goods, works and services. The Ministry Headquarters is responsible for procurement of operational goods and services for central operations and procurement of common capital goods, works and services that cater across all cost centres while the Medical Buying Committee under the Central Medical Stores (CMS) is responsible for procurement of medicines and medical supplies. CHs undertake their own procurement while DHOs handle procurement within the decentralization framework at district level. The MoH follows procedures for procuring goods as laid down in the Public Procurement Act. Instructions exist to operationalize the Act. The Public Procurement Regulations of 2004 provide detailed rules and procedures for fulfilling the objectives and implementing the provisions of the Act. Over the years, departments have started involving the Procurement Unit early hence ensuring timely finalization of the annual procurement plans; the Unit has started linking the procurement

plan to approved budget, there is adherence to approved procurement plan; procurement management systems have been introduced; the Unit has also implemented recommendations from procurement audits; and that procurement is also subjected to external audits. Capacity building in the field of procurement is ongoing. The MoH recognizes that procurement is weak hence the need for more TA support over the HSSP period.

### **1.2.12. Phama-covigillance System**

Pharmacovigillance is defined as the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other drug related problem. The pharmacovigillance of all drugs in the country is carried out in a section of registration under the Pharmacy, Medicines and Poisons board of the ministry of Health. The purpose of the National pharmacovigillance guidelines are intended for utilization by all health workers at both public and private health facilities.

The goal of the national pharmacovigillance system is to assure the safety of medicines by ensuring reliable and timely exchange of information on drug safety issues. Pharmacovigillance being an arm of patient care aims at making the best use of medicines for the treatment or prevention of disease. The ultimate goal of pharmacovigillance is the rational and safe use of medical drugs, assessment and communication of the risks and benefits of drugs on the market and educating and informing of patients on safety of drugs.

The process of pharmacovigillance comprises of;

- Monitoring medicines as used in everyday clinical practice and home settings to identify previous unrecognized adverse effects or any patterns of their adverse effects.
- Assessment of risks and benefits of medicines in order to determine what action if any is necessary to improve the safety of drugs.

### **1.2.13. Monitor the impact of any action taken.**

The main objectives of pharmacovigillance system are;

1. Improve patient care and safety in relation to the use of medicines and all medical and paramedical interventions.
2. Improve public health and safety in relation to the use of medicines.
3. To detect problems related to the use of medicines and communicate the findings in a timely manner.
4. To contribute to the assessment of benefit, harm, effectiveness and risk of medicines, leading to prevention of harm and maximization of benefit.
5. To encourage the safe, rational, and more effective use of medicines.
6. To promote understanding, education and clinical training in pharmacovigillance and its effective communication to the public.

The NTD Programme in Malawi will work in collaboration with pharmacovigillance section and a pharmacist will be attached to specifically work to handle the NTD drugs. There is a structure in place that works to carry out pharmacovigillance activities in the country. Sentinel sites exist in selected implementation units, complete with trained contact personnel, and these can provide surveillance of NTDs pharmaceutical commodities. These structures however need some capacity building to enable maximum functionality.

Reporting forms for both suspected Adverse Drug Reactions {ADR} and poor quality medicinal products have been designed and disseminated to hospitals but problems regarding their constant availability and training/sensitization on their usage still exist. Stepping up of action on reports made to the pharmacy and poisons' board / division of drug information and pharmacovigilance may also need to be supported.

#### **1.2.14. Health Financing**

Currently the GOM allocation to the health sector stands at 25.4% of the total government budget, which is about 8.7 % of GDP and translates to 27 US\$ per capita. The bulk of the funding to ministry of health goes to development and running public health services and support to private health services, preventive health services that includes, communicable and vector –borne diseases control and Malawi expanded programme for immunization.

Essential Health Package, specifically HIV/AIDS; (ii) ARI; (iii) Malaria; (iv) Diarrhoeal diseases; (v) Perinatal conditions; (vi) NCDs including trauma; (vii) Tuberculosis; (viii) Malnutrition; (ix) Cancers; (x) Vaccine preventable diseases; (xi) Mental illness and epilepsy; (xii) Neglected Tropical Diseases (NTDs); and (xiii) Eye, ear and skin infections, is allocated up to 54% of the total funding to the MOH. The funds allocated are mainly spent on surveillance and response/control of communicable and vector-borne disease; improving capacity to diagnose and treatment of communicable and vector-borne diseases. The interventions for each of these diseases are those that have been proven cost effective. There are some interventions that are not cost effective but have been included because they are necessary. The EHP will be provided free of charge over the period of the HSSP.

The recent adoption of Sector Wide Approach Package concept, the ministry of health is striving for a stronger strategic orientation and networking. Since Malawi has subscribed to the International Health Partnership, which is to ensure implementation of the Paris declaration of Aid effectiveness, MOH is fostering partnership of all stakeholders involved in financing, implementing and utilization of public health services. The ministry is addressing, strengthening of joint planning, performance monitoring and financing of public health services; capacity building on leadership at all levels of the health system; and partnerships and governance structures.

Health Sector funding /financing mechanisms as stipulated in the Health Sector Development Plan (HSDP) includes three channels of financial resource management: Channel 1: Pooled and managed by government or earmarked by agencies with direct disbursement; Channel II: Donor held financing provided directly used and accounted for them; Channel III: Direct donor programmed funds disbursed by Development Partners to finance specific contributions to HSDP usually through NGOs

#### **1.2.15. Leadership and Governance**

The Secretary for health is the Chief Executive Officer and the controlling Officer of the Ministry of Health. The principal secretary deputizes the Secretary for health. The director of preventive health services is in charge of all disease control activities and advises the secretary for health on matters of disease control. The proposed NTDs structure will have the NTDs Programme Manager working directly under the supervision of the Director of Preventive health services. The NTD programme will work in close collaboration with the departments of Ophthalmic services. The NTD Programme will have 6 Task forces and these are (1)

Schistosomiasis & STH (2) Onchocerciasis (3) Lymphatic filariasis (4) Trachoma (5) Human African Trypanosomiasis (HAT) and (6) Leprosy and skin conditions. This framework will promote an integrated approach or co-implementation of control of NTDs in the country with a common M&E system. See figure 4 below.

NTDs are included in the Health Sector Strategic Plan 2011-2016 and the existing government commitment and political will are supportive of NTD control activities in the country. An institutional framework exists, however, there is need for formation of an NTD coordinating body or programme to accelerate implementation of NTD control activities in the country including creation of an environment to engage partners in control of NTDs.

There is a policy on school health programme that addresses the control of Schistosomiasis and soil transmitted helminthes in school aged children. However, for the other NTDs there is no national policy but NTDs are included in the national strategic plan. The Department of Preventive health services oversees the implementation of all disease control programmes.

At district level the DHMTs are responsible for making District Health Plans. These are developed with inputs from stakeholders and peripheral health facilities. However, these plans include very little on NTDs, due to the fact that the indicators they base their plans on are directed from national level according to the availability of funds. Diseases with adequate funding generate indicators that are included in District operational plans. It is envisaged that with the current recognition and support of NTDs by the MOH and stakeholders, these diseases will be given full attention and be included in all the District work plans.

#### **1.2.16. Inter-sectoral collaboration**

In order to achieve the set target NTDs will aim at integrating relevant disease control activities with other programmes and ministry departments that address these targets. at national level the NTD programme collaborate with the ministries of Agriculture and Tourism in vector control through deployment of tsetse fly traps and targets. The NTD programme also collaborates with ministry of education in issues related to school health programme in general and specifically in control of Schistosomiasis and soil transmitted helminthiasis.

**figure 4: organogram showing position of proposed NTD programme within the ministry of health and relationship with other programme managers and key staff**

### **1.3. NTD situation analysis**

### 1.3.1. Epidemiology and burden of disease

#### 1.3.1.1. Lymphatic Filariasis.

Lymphatic filariasis, more commonly known as elephantiasis, is a painful and profoundly disfiguring disease. While the disease is usually acquired in childhood its visible manifestations occur in adults leading to temporary and permanent disability. It has a major social and economic impact on endemic countries.

Malawi has two previously known LF foci: one in the southern part of the country (Shire valley) and the other in the northern region along the Songwe river which forms its border with Tanzania. Surveys conducted in 2000, in those two foci have reported high antigenaemia prevalence based on immunochromatographic (ICT) card tests. The antigen prevalence approached 80% in some of the sampled villages. There was also remarkably high prevalence of LF associated disease in both areas (4% lymphoedema and up to 18% hydrocele). In addition, the survey in Karonga established that *W. bancrofti* infection is more wide spread than previously recognized, whereas in the lower Shire valley a surprisingly high antigenaemia prevalence (55%) was found amongst children (aged 1-9 years) than has been reported anywhere else.

A nation wide survey was done between November and December 2003 with the intention of determining the LF situation in other districts in Malawi (fig.5), The main focus of that survey were to measure the prevalence of *W.bancrofti* antigenaemia (based on ICT) in randomly selected villages which would determine district level endemicity status, to develop a map of the partial distribution of LF infection in Malawi based on village prevalence data, to provide baseline data that would inform decisions on instituting a “National LF Elimination Programme” and be able to sensitize district ministry of health personnel regarding LF and the prevalence level within their respective districts.

A total of 35 data points were sampled. Of these three were chosen in the field in inhabited areas where there were no villages on the Healthmapper database. A total of 2913 individuals were tested. There was a female excess (64%) in the study participants more marked in the 20-29 age (Fig 1). Overall there were 269 (9.2%) individuals positive for circulating filarial antigen (CFA). Amongst the males those positive tended to be older than as observed in their female counterparts.

Survey prevalence data by district and village are presented in a table below. This ranged from 0% to 35.9%. The spatial distributions of the sampled villages with their prevalence category are shown in Figure 3. In general villages in the western side of the country registered a CFA prevalence of less than 10%. This was with the exception of Mzenga Village in Mchinji District along the Malawi-Zambia border where a prevalence of 18.2% was found. Prevalence of over 20% was observed from villages in Salima and Mangochi districts along the southern shore of Lake Malawi. Also in Ntcheu district (Bwanje Valley), Balaka district near Lake Malombe and finally in Phalombe district along the shores of lake Chilwa. The highest prevalence (35.9%) was recorded at Kalembo village in Balaka district in southern Malawi. In that survey it was concluded that in Malawi lymphatic filariasis infection is more widespread than previously appreciated. In all districts except Chitipa in the north there was at least one individual who was positive on ICT. The low prevalence found in villages from the western side of Malawi could be explained by the fact that these areas are dry, of relatively higher altitude and thus not ideal for extensive mosquito breeding. The 18.2% prevalence observed at Mzenga Village in Mchinji along the Zambia border is intriguing. This is particularly so as there have been no anecdotal reports of LF disease from either the Malawi or Zambia side of the border in this area. Of note is

that this village is in close proximity to a perennial stream that sustains a reasonable amount of irrigated onion farming. Whether this setting is conducive for mosquito breeding and thus driving the LF infection will need further investigation. Ideally this should be coupled with night blood examination for microfilariae. It is also interesting to note that some villages from districts (Rumphi, Nkhata-Bay and Nkhotakota) along the lakeshore had prevalence of less than 10%. A possible explanation could be due to the fact that these districts are mountainous and thus well drained consequently limiting mosquito breeding.

The relatively high prevalence found in Salima, Ntcheu (Bwanje Valley), Balaka, Mangochi and Phalombe was unexpected. However, there have been isolated unpublished reports of cases with chronic manifestation of LF (hydrocele and elephantiasis) in these areas. It is worth noting that the ecological conditions in these districts are ideal for supporting large potential LF vector populations. Incorporating data from 2000 surveys clearly shows that the priority areas for LF control activities in Malawi will be the lakeshore districts, Phalombe plain and the Lower Shire Valley. In 2011, a repeat survey and mapping of Likoma which was not mapped in 2003 provides conclusive results of no requirement for MDA, a sample of 200 on 2 distant villages in Chitipa showed only 1 person positive for ICT and this represents 0.5% like that of 2000. In Likoma a sample of 100 at Chamba village showed no person positive for ICT representing a 0 prevalence for LF.

These findings have important implications for initiating the “Malawi LF Elimination Programme”. First, following WHO’s recommendation that all implementation units with a prevalence on ICT of over 1% be considered endemic and thus treated, the Malawi programme would involve 26 districts with a target population of over ten million. The population affected is far greater than ever envisaged. Secondly, both the northern (Karonga) and Southern foci (the Lower Shire Valley) share international borders which are largely porous. That calls for innovative approaches in carrying out control activities, as they have to be synchronised with those in neighbouring countries.



**Table 1: Disease: Lymphatic Filariasis**

<b>DISTRICT</b>	Location/ Site VILLAGE	Prevalence (NUMBERS/ RATE/PROPORTION)	Method used	Year of survey & Reference	<u>Latitude</u>	<u>Longitude</u>
Balaka	Kalembo	35.8	ICT	2003	14.84500	35.16900
Blantyre	Masanjala Lilangwe	6.5	ICT	2003	15.54490	35.02184
Chiradzulu	Mbalame	7.4	ICT	2003	15.70000	35.10000
Chitipa	Chisenga	0	ICT	2003	9.97500	33.38977
Chitipa	Siyombwe	0	ICT	2003	9.68441	33.24764
Dedza	Kamenyagwaza	7.8	ICT	2003	14.40750	34.98750
Dowa	Chimangamsasa	5.6	ICT	2003	13.70964	33.99795
Kasungu	Kadyaka	0	ICT	2003	13.07633	33.48360
Kasungu	Kaluluma	2.9	ICT	2003	12.58077	33.51870
Lilongwe	Mwenda 1 T/A Chadza	7.1	ICT	2003	14.14074	33.78825
Machinga	Phuteya	4.3	ICT	2003	15.19000	35.09887
Mangochi	Chilawe	9.8	ICT	2003	13.80000	35.10300
Mangochi	Chiponde	13.3	ICT	2003	14.38300	35.10000
Mangochi	Mtuwa	25.6	ICT	2003	14.68400	35.55100
Mchinji	Chalaswa	4.1	ICT	2003	14.11689	33.32919
Mchinji	Mzenga	18.2	ICT	2003	13.60427	32.73460
Mulanje	Gawani	7.7	ICT	2003	15.98100	35.78300
Mulanje	Mbewa	18.8	ICT	2003	15.99970	35.48611
Mwanza	Chapita A	4.7	ICT	2003	15.63022	34.59139
Mzimba	Milingo-Jere	0	ICT	2003	12.20374	33.33340
Mzimba	Kambombo	1.9	ICT	2003	11.17551	33.52649
Nkhata-Bay	Kalumpha	6.7	ICT	2003	12.08733	34.05695
Nkhata-Bay	Mizimu	7.8	ICT	2003	11.55820	34.18150
Nkhotakota	Mowe	9	ICT	2003	12.55496	34.13366
Nkhotakota	Tandwe	3.7	ICT	2003	13.02981	34.26246
Ntcheu	Gwaza	28.3	ICT	2003	14.52800	34.68000
Ntcheu	Nkonde-1	9.1	ICT	2003	14.98570	34.82825
Ntchisi	Kalulu	3	ICT	2003	13.33129	33.74804
Phalombe	Maguda	24.4	ICT	2003	15.51774	35.78996
Rumphi	Bongololo	1.4	ICT	2003	10.81276	33.52233
Rumphi	Mhango	9.8	ICT	2003	10.81000	33.52379
Salima	Chipoka-Nkwizi	21.9	ICT	2003	14.03676	34.50614
Salima	Kasonda	16.7	ICT	2003	13.59828	34.29268
Thyolo	Nkaombe	6.3	ICT	2003	15.99271	35.04998
Zomba	Kapenda	3.5	ICT	2003	15.35885	35.40305
Karonga	Mwenitete	47.6	ICT	2000	9.71257	33.92973

Karonga	Mwakyusa	48.7	ICT	2000	9.69795	33.89313
Karonga	Mwenepela	57.8		2000	9.67193	33.8252
Karonga	Kashata	44	ICT	2000	9.73315	33.88652
Karonga	Mwansaku	44	ICT	2000	9.8092	33.86483
Karonga	Mwambetania	58	ICT	2000	9.86747	33.86892
Karonga	Kafikisira	45.1	ICT	2000	9.91213	33.93105
Karonga	Mwenitete-Mpata	48	ICT	2000	9.94957	33.82237
Karonga	Ngosi	30	ICT	2000	10.01228	33.94907
Karonga	Mwakabanga	30	ICT	2000	10.14422	34.01782
Karonga	Kanyuka	27.5	ICT	2000	10.30768	34.12692
Karonga	Bonje	56	ICT	2000	10.49027	34.17098
Nsanje	Chazuka	40.5	ICT	2000	16.84261	35.25259
Nsanje	Nchacha 18	58.1	ICT	2000	16.63617	35.17126
Nsanje	Gamba	66.7	ICT	2000	16.5811	35.14076
Chikwawa	Nchingula	59.4	ICT	2000	15.99828	34.48297
Chikwawa	Zilipaine	74.4	ICT	2000	16.07998	34.88262
Chikwawa	Mbande	70.4	ICT	2000	16.16167	34.79332
Chikwawa	Pende	68.1	ICT	2000	16.04362	34.72428
Chikwawa	Belo	79.1	ICT	2000	16.02093	34.8162
Chikwawa	Mfunde	33.3	ICT	2000	16.19929	35.01652
Chikwawa	Kasokeza	56.7	ICT	2000	16.11213	34.92532
Chikwawa	Khumbulani	15.3	ICT	2000	15.99232	34.8791
Chikwawa	Muyaya	26.9	ICT	2000	16.04667	34.90783
Likoma	Chamba	0	ICT	2011		
Chitipa	Mwawupighu	1	ICT	2011		
Chitipa	Titikosamsikonda	0	ICT	2011		

### 1.3.1.2. Onchocerciasis

Onchocerciasis in Malawi has been known from the early 1930s but the real magnitude of the disease was never understood until in the early 1980s and 1990s when large-scale investigations were carried out. Onchocerciasis in Malawi was first recognized in Thyolo Tea Estates and confirmed in 1984 using a Human Population Disease Survey and Vector Research and in 1990, Mwanza was also identified to have cases of onchocerciasis. Based on these findings, in 1984, the GoM instituted the Malawi Onchocerciasis Control Programme. During the first years the programme focused much on assessing how many people were affected by the disease, determining infection rates, identifying vector species involved in transmission of the diseases and formulating recommendations regarding appropriate control measures to the Ministry of Health (MOH). *Simulium damnosum* were found to be the species responsible for transmission of onchocerciasis in Malawi. After extensive trials with Ivermectin (Mectizan®) from 1987 to 1990, mass distribution using the Community Based Distribution (CBD) strategy started in Thyolo District in 1991 and Mwanza District in 1993 respectively.

## Disease endemicity

With assistance from African Program for Onchocerciasis Control (APOC), a countrywide survey using Rapid Epidemiological Mapping of Onchocerciasis (REMO) was conducted in 1997 (Figure 6). Results from this survey showed that besides Thyolo and Mwanza/Neno, the disease was endemic in parts of Mulanje, Phalombe, Blantyre, Chiradzulu and Chikwawa Districts. In 2006, a refinement of the mapping was conducted. Therefore, the disease is endemic in 8 of the 28 districts in Malawi.

The assessment of onchocerciasis transmission has been conducted in 2011 and 2012 in 60 villages across all the endemic zones including the hypo-endemic areas. The results have been very satisfactory (57 villages with 0% prevalence), except in three villages that had prevalence of 1.05%, 8.18% and 8.67%. The main endemic zone in the country is a spill-over from Mozambique where mass treatment for onchocerciasis has never been conducted. Based on 1999 REMO results the area had been classified as hypo endemic. It is therefore critical that the current situation of Onchocerciasis in adjacent areas of Mozambique (Nyasa province) be evaluated in 2015 as planned.

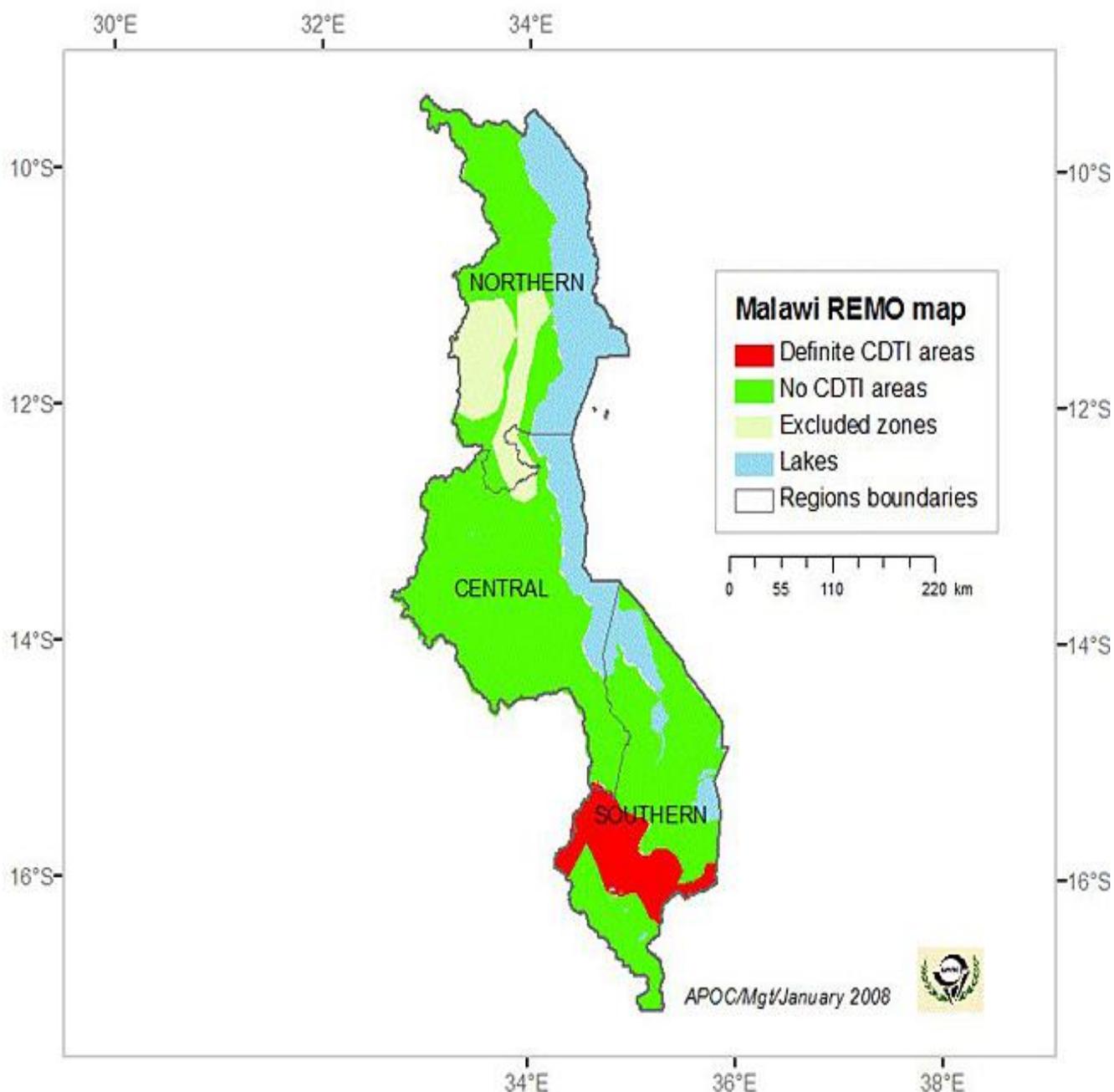
With the good epidemiological results obtained in Malawi, entomological assessments have been undertaken. A total of 15 vector collection sites were selected for evaluation following an extensive 34 breeding sites survey. Samples received that had members of the *S. damnosum* s.l. for processing to determine infection rates were from only 8 sites (Figure 11). These 8 sites were part of the sites with the highest pre-control infection levels. Results from the APOC's Yankum Dadzie Laboratory, Ouagadougou, indicated zero infection at all the sites. Although samples were not received from all the sites, this initial result appears to confirm results of the epidemiological surveys that indicate transmission could have been interrupted. However, assessments with intensive supervision are necessary to further confirm the absence of transmission. Thereafter, treatment may be stopped.

Based on the REMO, the endemicity level in the districts were as follows:

**Table 3.2 : Endemicity Level**

Project	CDTI Districts	Number of communities/villages		
		Meso-endemic zone (20-39% nodule rate) $A_1$	Hyper-endemic zone (more than 39%) $A_2$	Total in meso/hyper- endemic zone $A_3 = A_1 + A_2$
Extension	Blantyre	479	148	627
	Phalombe	52	10	62
	Mulanje	310	59	369
	Chikwawa	55	73	128
	Chiradzulu	328	0	328
Thyolo/Mwanza	Thyolo	350	66	416
	Mwanza	60	58	118
	Neno	54	84	138
<b>TOTAL</b>		<b>1,688</b>	<b>498</b>	<b>2,186</b>

**Figure 6: REMO Map**



### 1.3.1.3. Schistosomiasis (Bilharzia)

#### Definition, cause and transmission

Schistosomiasis (also called bilharzia) is a parasitic disease caused by the water borne flat worm or black flukes called schistosomes. In humans Schistosomiasis is caused by 5 species of schistosomes namely; schistosoma mansoni, S. haematobium, S. japonicum, S.intercalatum and S.mekongi. In Malawi only schistosoma mansoni and haematobium species are present. The disease is transmitted through contact with infected surface water. This particularly affects people engaged in agriculture, fishing and swimming.

Three phases of bilharzia infection have been described

- Phase I (Early childhood): Repeated infections cause a built up of worm load in the body.
- Phase II (Teenage and Early Adult Life): A natural immunity develops but some people with previous heavy infections may already have reversible or irreversible damage.
- Phase III (Rest of Adult Life): New infections are unlikely to become established because of immunity. Old worms in the body are dying off. By this time the person has either frank disease or has avoided the consequence by avoiding heavy infection or by being treated at an early stage.

### Distribution and prevalence

Globally schistosomiasis is endemic in 74 developing countries, infecting more than 200 million people in rural and peri urban communities. Of these, 120 million have symptoms of the disease of whom 20 million have severe consequences.

In Malawi Schistosomiasis is widely spread and is a public health problem. *Schistosoma mansoni* was first documented in Karonga district in 1924. It is now known that both *S. haematobium* and *S. mansoni* are endemic in Malawi. The prevalence of the disease in the country is estimated between 40% and 50%. School-age children are the highly infected group and represent the most intensely affected. This disease does not only cause immediate morbidity in children but also have long-term effect on their development into adulthood.

A number of surveys conducted in Linthipe Valley in Dedza and Zomba between 1980 and 1990 indicated a prevalence of about 66% for *S. mansoni* and 65% for *S. haematobium* with high egg excretion intensity. Some studies have showed that *S. haematobium* was associated with squamous cell carcinoma of the bladder as well as primary infertility in women in Zomba. Schistosomiasis is not restricted to rural areas, but in urban areas as well. In 1981 a study done Lilongwe City found a high proportion of school-age children to be infected with *S. mansoni* (47%) and 18% with *S. haematobium*.

Surveys conducted by District Health Offices recently point to the fact that schistosomiasis is a major public health problem in the whole country with prevalence of *S. haematobium* of above 50%. A schistosomiasis survey in 1994 recorded prevalence of *S. haematobium* of 83% in Chembe Village in Lake Malawi National Park compared to 46% in 1981 indicating that the transmission of schistosomiasis may be increasing. In a school survey involving 113 schools in Mangochi district the prevalence of *S. mansoni* ranged from 22% to 90%, with 38 schools having prevalence of  $\geq 50\%$ . Another series of surveys in 1994 in Lungwena (Mangochi district) showed prevalence rates ranging from 76 – 80%. In Karonga 75% of the schoolchildren were found infected with schistosomiasis in 2001. In Chikwawa district the Bilharzia Laboratory always reports prevalence rates above 80%. All these studies point to the fact that schistosomiasis and soil-transmitted helminths are wide spread in Malawi, highly prevalent and a major cause of morbidity in the community, particularly school-age children.

Prior to MDA with Praziquantel in 2008, 2009 and 2010, baseline prevalence surveys for Schistosomiasis haematobium was carried out in 18 of the 28 political administrative districts in the country and the prevalence ranged from 10% (Mzimba North) to 59.5% (Mulanje) using WHO guidelines on sampling and microscopy techniques. While these studies are showing declines in prevalence in certain hot areas, it is also interesting that some traditional areas for schistoma mansoni are showing increase in schistosoma haematobium such as Lilongwe and Dedza. All these studies point to the fact that schistosomiasis and soil-transmitted helminths are wide spread in Malawi, highly prevalent and a major cause of morbidity in the community, particularly school-age children. The remaining 10 political districts were surveyed in 2011.

Table 3.3: Known disease distribution of Schistosomiasis (Bilharzia) in Malawi

District	Location / Site Village	Prevalence (numbers/rate / proportion)	Prevalence (number s/rate/ proportion)	Study Method used	Year of survey and reference
Balaka			13.73	Urine filtration /Modified Kato	2011 (SCI/MoH baseline)
Blantyre city			11.66	Urine filtration	2011(SCI/MoH baseline)
Blantyre rural			30.18	Urine filtration	2011(SCI/MoH baseline)
Chiradzulu			34.53	Urine filtration	2011(SCI/MoH baseline)
Lilongwe city			14.63	Urine filtration	2011(SCI/MoH baseline)
Lilongwe rural east			22.15	Urine filtration	2011(SCI/MoH baseline)
Lilongwe rural west			13.63	Urine filtration	2011(SCI/MoH baseline)
Chikhwawa	Jombo	25.0		Urine filtration	2008 (WFP/MoH survey baseline)
Chikhwawa	Kalima	14.0		Urine filtration	2008(WFP/MoH survey baseline)
Chikhwawa	Goma	56.0		Urine filtration	2008(WFP/MoH survey baseline)
Chikhwawa	Dyeratu	18.0		Urine filtration	2008(WFP/MoH survey baseline)
Chitipa	Kasutu	14.3		Urine filtration	2010; MoH Unpubl. Report ;2010
Chitipa	Kapenda	20		Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Kapoka	13		Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Chendo	27.1		Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Kayanike	4		Urine filtration	2010; MoH Unpubl. Report ; 2010
Dedza		43.6		Urine	2010;

				filtration	MoH Unpubl. Report ; 2010
Dedza	Mazanjala	11.1		Urine filtration	2010; MoH Unpubl. Report ; 2010
Dedza	Dzenza	50		Urine filtration	2010; MoH Unpubl. Report ; 2010
Kasungu	Misuku	34.9		Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Chibisa	18.14		Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Chipwaira	8.33		Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Kasanya	13.33		Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Tchetsa	6.8		Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Msiwa	73.0		Urine filtration	2010; MoH Unpubl. Report ; 2010
Kasungu	Guchi	53.3		Urine filtration	2010; MoH Unpubl. Report ; 2010
Machinga		33.9		Urine filtration	2010; MoH Unpubl. Report ; 2010
Mchinji	Chapana ma	38		Urine filtration	2010(WFP/MoH survey baseline)
Mchinji	Sankhani	30			2010(WFP/MoH survey baseline)
Mchinji	Mbingwa	40			2010(WFP/MoH survey baseline)
Mulanje	Mombo	68		Urine filtration	2010(WFP/MoH survey baseline)
Mulanje	Chisitu	52		Urine filtration	2010(WFP/MoH survey baseline)
Mulanje	Mpachika	74		Urine filtration	2010(WFP/MoH survey baseline)
Mulanje	Njedza	46		Urine filtration	2010(WFP/MoH survey baseline)
Mwanza and Neno			19.48	Urine filtration	2011(SCI/MoH baseline Moderate)
Mzimba North			8.52	Urine filtration	M2011(SCI/MoH baseline moderate)
Mzimba south			10.81		M2011(SCI/MoH baseline moderate)
Mzuzu city			5.01		2011(SCI/MoH baseline Low)
Karonga			16.1	Urine filtration	2010; MoH Unpubl. Report ;

					2010 College Of Medicine-Bagrey Ngwira
Karonga	Mwaula mbo		17.2	Urine filtration	2010 College Of Medicine-Bagrey Ngwira
Karonga	Mwenet ete		21	Urine filtration	2010 College Of Medicine-Bagrey Ngwira
Karonga	Nthola		10	Urine filtration	2010 College Of Medicine-Bagrey Ngwira
Mzimba North	Mcheng autuwa		10	Urine filtration	2010 MoH Unpubl.report
Nkhotakota			35	Urine filtration	2008 MoH Unpubl.report
Balaka			20.3	Urine filtration /Modified Kato	2010; MoH Unpubl. Report ; 2010
Chikhwawa	Jombo		25.0	Urine filtration	(WFP/MoH survey baseline)
Chikhwawa	Kalima		14.0	Urine filtration	(WFP/MoH survey baseline)
Chikhwawa	Goma		56.0	Urine filtration	(WFP/MoH survey baseline)
Chikhwawa	Dyeratu		18.0	Urine filtration	(WFP/MoH survey baseline)
Chiradzulu			28.8	Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Kasutu		14.3	Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Kapenda		20	Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Kapoka		13	Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Chendo		27.1	Urine filtration	2010; MoH Unpubl. Report ; 2010
Chitipa	Kayanik e		2	Urine filtration	2010; MoH Unpubl. Report ; 2010
Dedza			43.6	Urine filtration	2010; MoH Unpubl. Report ; 2010
Dedza	Mazanja la		11.1	Urine filtration	2010; MoH Unpubl. Report ;

					2010
Dedza	Dzenza		50	Urine filtration	2010; MoH Unpubl. Report ; 2010
Kasungu	Misuku		34.9	Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Chibisa		18.14	Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Chipwaira		8.33	Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Kasansya		13.33	Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Tchetsa		6.8	Urine filtration	2008(WFP/MoH survey baseline)
Kasungu	Msiwa		73.0	Urine filtration	2010; MoH Unpubl. Report ; 2010
Kasungu	Guchi		53.3	Urine filtration	2010; MoH Unpubl. Report ; 2010
Lilongwe	Mseru		32.0	Urine filtration	2008(WFP/MoH survey baseline)
	Mphandula		51.0	Urine filtration	2008(WFP/MoH survey baseline)
	Kafinya		51.0	Urine filtration	2008(WFP/MoH survey baseline)
	Mdzobwe		35.1	Urine filtration	2008(WFP/MoH survey baseline)
	Mawelo		19.4	Urine filtration	2008(WFP/MoH survey baseline)
Lilongwe			33.8	Urine filtration	2008(Jemu SK, et al)
Machinga			33.9	Urine filtration	2010; MoH Unpubl. Report ; 2010
Mchinji	Chapanama		38	Urine filtration	2010; MoH Unpubl. Report ; 2010
Mchinji	Sankhani		30	Urine filtration	2010; MoH Unpubl. Report ; 2010
Mchinji	Mbingwa		40	Urine filtration	2010;(WFP/MoH survey baseline)
Mulanje	Mombo		68	Urine filtration	2010(WFP/MoH survey baseline)
Mulanje	Chisitu		52	Urine filtration	2010;(WFP/MoH survey baseline)
Mulanje	Mpachika		74	Urine filtration	2010(WFP/MoH survey baseline)
Mulanje	Njedza		46	Urine filtration	2010;(WFP/MoH survey baseline)
Mzimba			10	Urine	2010;

North				filtration	MoH Unpubl. Report ; 2010
Karonga			16.1	Urine filtration	2010; MoH Unpubl. Report ; 2010
Karonga	Mwaula mbo		17.2	Urine filtration	2010 COM
Karonga	Mwenete		21	Urine filtration	2010 COM
Karonga	Nthola		10	Urine filtration	2010 COM

Phalombe				Urine filtration	2008; (WFP/MoH survey baseline)
Thyolo	Nasato		35	Urine filtration	2010; (WFP/MoH survey baseline)
Thyolo	Luchenza		62	Urine filtration	2010; (WFP/MoH survey baseline)
Thyolo	Mpinji		28	Urine filtration	2010; (WFP/MoH survey baseline)
Thyolo	Namitete		12.3	Urine filtration	2010; (WFP/MoH survey baseline)
Zomba				Urine filtration	2010; MoH Unpubl. Report ; 2010
Nkhotakota			43.3	Urine filtration	2010; MoH Unpubl. Report ; 2010
Nsanje	Bangula		46.0	Urine filtration	2008; (WFP/MoH survey baseline)
Nsanje	Chirimba		62.0	Urine filtration	2008; (WFP/MoH survey baseline)
Nsanje	Khope		44.0	Urine filtration	2008; (WFP/MoH survey baseline)
Ntcheu	Chitale		0	Urine filtration	2008; (WFP/MoH survey baseline)
Ntcheu	Mikoke		22.0	Urine filtration	2008; (WFP/MoH survey baseline)
Ntcheu	Kunyangwa		24.0	Urine filtration	2008; (WFP/MoH survey baseline)
Ntcheu	Matale		14.0	Urine filtration	2008; (WFP/MoH survey baseline)

Ntcheu	Manjawira		10.0	Urine filtration	2008; (WFP/MoH survey baseline)
Ntcheu	Kambilonjo		41	Urine filtration	2011(SCI/MoH baseline)
Ntcheu	Banda		42	Urine filtration	2011(SCI/MoH baseline)

#### 1.3.1.4. Soil Transmitted Helminthes (STH)

Soil transmitted Helminthes are commonly known as intestinal worms are the most common infections worldwide, affecting more than 2000 million people worldwide including Malawi. They are transmitted by worms commonly known as intestinal worms such as *Ascaris lumbricoides*(roundworm), *Trichuris trichiuria*(whip worm) and *Anclostoma* sp. (hookworm) Symptoms of helminthiasis include diarrhea, abdominal pain, “general malaise and weakness that may affect working and learning capacities and impair physical growth” (WHO 2007) Important to mention is that hookworms cause intestinal blood loss precipitating anaemia. World Health Organization recommends haemoglobin cut-offs of 120 g/l in adults and 110 g/l in children. Routine administration of intestinal anthelmintic agents results in a marginal increase in haemoglobin (1.71 g/l), which could translate on a public health scale into a small (5% to 10%) reduction in the prevalence of anaemia in populations with a relatively high prevalence of intestinal helminthiasis.

Crompton (2003) in a review of studies conducted in Sudan states that treatment with anti-helminthes annual re-treatments and interval between therapy and follow up after 8 years reports prevalence and intensity down after one round of PZQ. Prevalence of diarrhea down only after two rounds. PPF down only after three rounds. There is no advantage of more than one treatment per year, but of total number of treatment rounds. Threefold less occurrence of PPF 8 years after at least three rounds of PZQ.

Montessor (2003) in a review of studies conducted in Saudi Arabia states that treatment with anti-helminthes 6 months’ interval had re-treatments and interval between therapy and follow up after 6 months’ reports had Complete healing of patients after therapy.

The insidious effects of helminthiasis on nutritional status (Tomkins and Watson 1989; Nesheim, 1989), physical and intellectual development (Stephenson 1987; Cooper et al 1990; Nokes et al 1992) and non-specific symptomatic presentation as seen in *Trichuris colitis*, (Cooper et al 1986), and the magnitude of the burden of geohelminthiasis is grossly underestimated and therefore not given sufficient attention by Health Managers especially at the grass-root (rural) level in developing countries.

Faeces of individuals infected by intestinal worms (helminthes) have parasite eggs. In communities where there are no latrines, soil and water are contaminated with the egg containing faeces. The eggs mature in the soil within 2-4 weeks depending on the type of worm (3 weeks for whipworm and 2 weeks for roundworms and hookworms). The worms can infect humans in two ways. These are:

- Direct ingestion of eggs from contaminated soil (*Ascaris lumbricoides* and *Trichuris trichiuria*), for example when children playing in infected soil put their hands in their mouths without washing them; Ingestion of eggs in contaminated water; Eating unwashed , raw vegetables and

fruits on which are worm eggs . People who swallow soil (geophagus behaviour), for example those who crave it, swallow worm eggs as well, if the soil is contaminated.

- Active penetration of the skin by larvae (hookworm) as one walks barefoot on contaminated soil or handles contaminated soil with bare hands. The larvae penetrate through the skin, especially that between the toes.

Infection with intestinal nematodes is common in poor and middle income countries, where inadequate disposal of faeces is more likely than in the developed world. Children of school age are more likely to be infected than adults. Although the worm infestation itself can cause death, this is a far less common outcome than associated illness and developmental and cognitive impairment in the more than one billion children infected with intestinal worms worldwide.

Anaemia is a common consequence of intestinal worm infection because worms adhere to gut mucosa and feed off blood. Blood loss increases with worm load. Anaemia has been shown to be associated with poor resistance to other infections and can impair cognitive ability in children. In east African areas, where the prevalence of worm infection is highest, it's been found that 15-25% of anaemia in schoolchildren is caused by hookworm infection.

Risk of infection is higher in areas of poor sanitation, where people are poor and do not wear shoes and where hygiene is also poor.

WHO (2007) say that the greatest number of STH infections occur in Sub-Saharan Africa, the Americas, China and east Asia. While data on STH is scanty for Malawi, the 2006 national baseline survey for the National School Health and Nutrition (SHN) programme found that 9% of the children 5-10 years, had worms while 36% reported that they had had worms before. In fact, 25% of these reported that they had worms on the day of the survey. Their assertion was based on "stomach pains and passing worms in stool." More girls (33%) than boys (17%) reported having worms. In addition, the survey found that 57% of the children reported that they washed their hands after using the toilet while 55% reported that they always washed their hands before eating. This was despite the fact that 85% of the children knew that washing of hands protects one against disease. The same survey found that worm infections were evident in coastal, midland and highland areas. Other studies (WHO 2004) suggest that the STHs are widely distributed in Malawi and other sub-Saharan countries.

Monitoring and evaluation are sometimes used synonymously to indicate a critical review or assessment of a selected activity(ies) or programmes. Last (2001) in 'A Dictionary of Epidemiology' presents three definitions for monitoring, all of which highlight the intermittent or episodic nature of the assessment activity. For example, for the context it will be used in this chapter, monitoring is defined by Last (2001) as the 'Episodic measurement of the effect of an intervention on the health status of a population or environment. The process of collecting and analyzing information about the implementation of a programme for the purpose of identifying problems such as noncompliance and taking corrective action.' Monitoring will therefore converge on informing the implementation process now (ongoing) or of the future.

Several STH control activities have been or are presently being conducted under the auspices of the Community Health Sciences Unit (CHSU) in collaboration with the National School Health Program(NSHP), NGOs and other stakeholders. The pilot control programme involved the training of teachers, health workers and local leaders in schistosomiasis and STH control. It administered Prazquantel and albendazole to 10 000 community members (children and adults). The MOHP and the World Vision Canada/CIDA have also been conducting schistosomiasis and soil transmitted

helminthes control activities in 33 villages in two districts. This involved regular targeted chemotherapy for 62,576 school age children, construction of 1500 pit latrines and sinking of 12 boreholes and 30 shallow wells. Health workers, local leaders, women, drama groups and traditional dancers have been trained in different activities relevant to the control of both schistosomiasis and soil transmitted helminthes. Child Health days supported by UNICEF have been used for control of worm infections. The national School Health and Nutrition programme carries out nationwide chemotherapy using Praziquantel and Albendazole together with health and hygiene education targeting school age children. Therefore, to date, the control of STH has involved chemotherapy, sanitation promotion and hygiene education. Past control efforts, though fragmented, achieved reductions in infection suggesting that de-worming efforts, improved sanitation and hygiene education could ultimately eliminate STH. Albendazole has been used for the chemotherapy. Coupled with the chemotherapy, are health education and sanitation programmes. These promote:

- Washing of hands with soap and water after using the toilet, before eating, before preparing food and after changing the baby's nappies.
- Washing of fresh vegetables and fruits before they are eaten
- Using safe water
- Construction and use of toilets
- Wearing of shoes

The success of the control programmes depended on partnerships, community mobilization and capacity building to enhance implementation of the sanitation, health education and chemotherapy efforts.

Several STH control activities have been or are presently being conducted under the auspices of the Community Health Sciences Unit (CHSU) in collaboration with the National School Health Program (NSHP), NGOs and other stakeholders. The pilot control programme involved the training of teachers, health workers and local leaders in schistosomiasis and STH control. It administered Praziquantel and albendazole to 10 000 community members (children and adults.)

The fact that de-worming with albendazole, improved sanitation and hygiene education can reduce the STH load in the population suggests that interventions do make a difference. Secondly, praziquantel and albendazole can be co-administered without adverse effects. Ivermectin and albendazole can also be co-administered. Hence the integrated management of the NTDs is beneficial as it reduces number of visits to communities by health personnel, carries out chemotherapy at the same time for all communities hence is cost-effective.

**Table 3.4: Known disease distribution of Soil Transmitted Helminthes (STH) in Malawi**

District name	Location/ Site Village	prevalence %	Study Method used	Year of survey and reference
Balaka		0.3922	Kato katzs	2011, SCI/MoH Report
Blantyre city		1.421	Kato katzs	2011, SCI/MoH Report

Blantyre rural		1.3245	Kato katzs	2011, SCI/MoH Report
Chiradzulu		1.0239	Kato katzs	2011, SCI/MoH Report
Lilongwe city		1.0101	Kato katzs	2011, SCI/MoH Report
Lilongwe rural east		3.3333	Kato katzs	2011, SCI/MoH Report
Lilongwe rural west		3.8462	Kato katzs	2011, SCI/MoH Report
Mwanza and Neno		0.3448	Kato katzs	2011, SCI/MoH Report
Mzimba north		3.2368	Kato katzs	2011, SCI/MoH Report
Mzimba south		2.5381	Kato katzs	2011, SCI/MoH Report
Mzuzu city		2.6667	Kato katzs	2011, SCI/MoH Report

### 1.3.1.5. Trachoma

Trachoma is a major public health problem in Malawi. It is second cause of preventable blindness after cataract. Prevalence surveys conducted between 2008 to 2014 in 24 districts showed that trachoma is endemic (>5% TF) in 15 districts (table 3.5). This necessitated the implementation of SAFE Strategy (Surgery, Antibiotic distribution (MDA), Facial Washing and Environmental improvement). The SAFE strategy was launched in October 2014 to eliminate trachoma by the year 2020 in the surveyed districts. The remaining 5 out of 29 districts will be mapped in 2015.

**Table 3.5 Known disease distribution of Trachoma in Malawi**

District	Location/ Site Village	Prevalence of TF children aged 1-9 years	Prevalence of TT in adults aged 15 or more	Study used	Method	Year of survey and reference
Chikwawa		13.6	0.6	WHO method	Standard	2008, MoH report
Mchinji		21.7	0.3	WHO method	Standard	2008, , MoH report
Nsanje		18.5	0.5	WHO method	Standard	2012, , MoH report
Salima		17.1	0.9	WHO method	Standard	2012, , MoH report
Mwanza		7.8	0.2	WHO method	Standard	2012, , MoH report
Kasungu		13.5	0.6	WHO method	Standard	2013, MoH report
Nkhotakota		11.1	0.3	WHO method	Standard	2013, MoH report
Lilongwe		12.6	0.2	WHO method	Standard	2013, MoH

East						report
Lilongwe West		10.1	0.2	WHO method	Standard	2013, MoH report
Dowa		8.3	0.2	WHO method	Standard	2013, MoH report
Ntchisi		7.8	0.1	WHO method	Standard	2013, MoH report
Ntcheu		6.0	0.1	WHO method	Standard	2013, MoH report
Mangochi		7.1	0.1	WHO method	Standard	2013, 2013, MoH report
Mangochi 2		8.2	0.3	WHO method	Standard	2013, 2013, MoH report
Mangochi 3		6.8	0.3	WHO method	Standard	2013, 2013, MoH report
Machinga		7.2	0.4	WHO method	Standard	2013, 2013, MoH report
Balaka		4.3	0	WHO method	Standard	2013, 2013, MoH report
Neno		6.8	0.1	WHO method	Standard	2013, 2013, MoH report
Zomba 1		3.7	0.1	WHO method	Standard	2013, 2013, MoH report

Zomba 2		5.3	0.1	WHO method	Standard	2013, MoH report
Phalombe		2.7	0.2	WHO method	Standard	2013, MoH report
Mzimba South		0.3	0.5	WHO method	Standard	2013, MoH report
Mzimba North		0.4	0.4	WHO method	Standard	2013, MoH report
Nkhatabay		0.2	0.3	WHO method	Standard	2013, MoH report
Likoma		0	0	WHO method	Standard	2013, MoH report
Rumphi		<5	<0.1	WHO method	Standard	2013, MoH report
Karonga		0.3	0.6	WHO method	Standard	2013, MoH report
Chitipa		0.4	0.4	WHO method	Standard	2013, MoH report
Dedza		Not known	Not known			
Blantyre		Not known	Not known			
Chiradzulo		Not known	Not known			
Thyolo		Not known	Not known			
Mulanje		Not known	Not known			

**NOTES: More than 10% TF- 3 rounds of mda once a year, 5- 9.9% one round, Below 5% - Case by case management**

### 1.3.1.6. Leprosy

#### Definition, aetiology and transmission and presentation.

Leprosy is a chronic, very mildly infectious disease of the skin and nerves usually presenting with skin lesions and nerve enlargement. The condition is caused by *Mycobacterium leprae*. The mode of transmission is uncertain, but is believed to be spread by droplet inhalation or ingestion of infected fluid through sneezing or coughing. The disease mainly presents with hypopigmented skin lesions with loss of sensation, enlarged or tender peripheral nerves at the site of predilections and a positive slit skin smear. Leprosy is considered to be a special public health problem, owing to the permanent disabilities it causes as well as social consequences such as discrimination and stigma.

#### Distribution and Prevalence

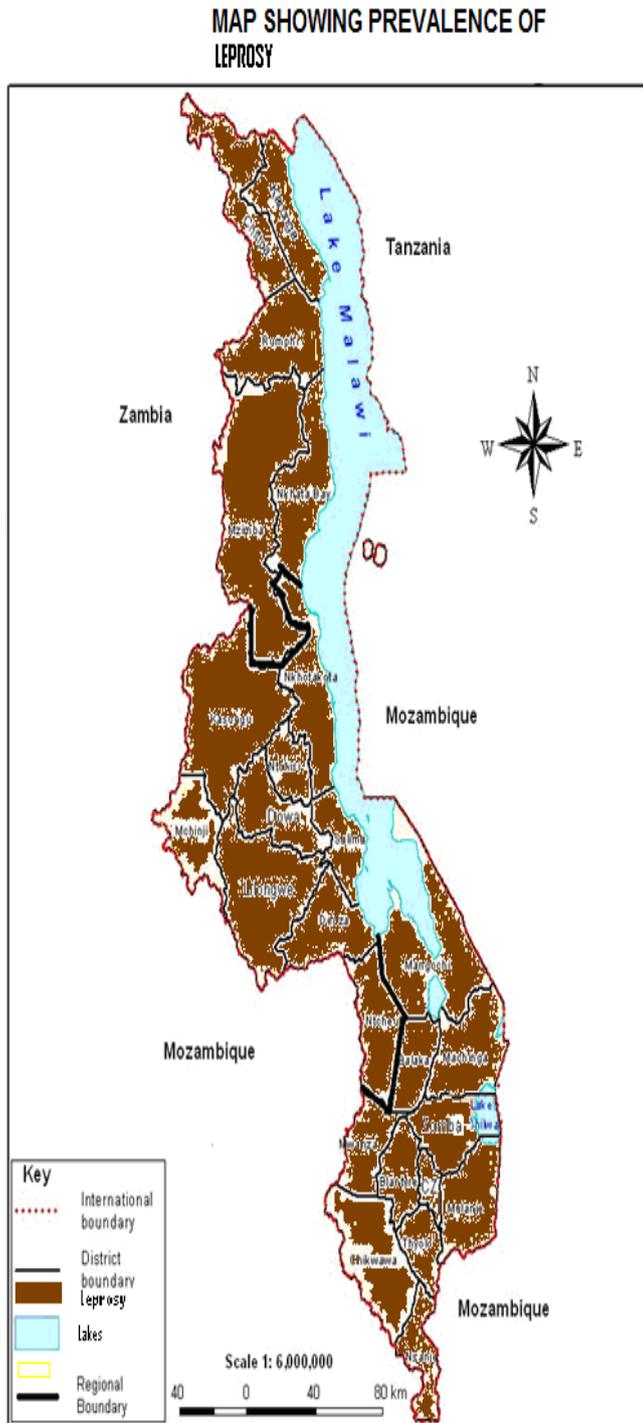
Leprosy is endemic in all 28 districts in the country and affects all age groups, though it is very rare in under-fives. Malawi achieved the WHO defined leprosy elimination target in 1994 when it first registered 1 case per 10,000 population and still maintains the status quo till today. Leprosy generally has been in the country since the 50s/or much earlier but there was less attention medically being offered to those affected and the patients were mostly being dumped in caves or isolated places where they could be until natural death could take them. Then the Malawi Government arranged with the British Leprosy Association called LEPROA and also the Seventh Day Adventist Mission to assist the country in management of leprosy as early as the 60s and they continued until leprosy was eliminated in the country in 1994. The prevalence rate for the diseases has been ranging between 0.4 to 0.7 since the past 10 years and in 2010 it was 0.5 case per 10,000 population. In 1976 Malawi had registered 20,866 leprosy cases, then dropped to 18,862 cases in 1980 and dropped further to 3,240 cases in 1985 then kept dropping annually till it was 1,000 cases only in 1994 then from that time till this date it has remained below 1000 cases. Multi Drug Therapy (MDT regimens) have been the major factor in achieving this elimination target and maintaining it.

All countries including Malawi, in the WHO -African region have achieved this elimination target, but of late all countries have been noticing a new trend in increasing numbers of new cases in some districts or pockets. And with the huge numbers of leprosy cases that have been treated there has also been a lot of leprosy disabled persons who need care, and WHO has set up a new target of trying to eliminate leprosy at district level and also to reduce the number of leprosy grade 2 disabilities by 35% basing on 2010 figures. Malawi had 48 cases of grade 2 disabilities in 2010 by December 31<sup>st</sup> and would target to get 30 or 29 cases or much less by 2015. The country has managed to get 24 districts in the country to have reached elimination target of less than one case per 10,000 population and only 4 remain to do so and would like to achieve this goal by 2015 as well as maintaining the national elimination target of less than 1 case per 10,000 population.

The prevalence rate fluctuations so far observed ranging from 400 to 700 cases per year and also taking into account that active case finding exercises so far carried out recently in two districts, in the country, one in the centre and one in the north, indicate that leprosy is still a major public health problem that needs to be closely monitored to avoid the situation sliding backwards hence the need for more resources.

For the most recent data see the table below and the graph on prevalence and also the trend of leprosy for the past 5 to 10 years.

Figure 10: MAP SHOWING PREVALENCE OF LEPROSY



### **1.3.1.7. Human African Trypanosomiasis (HAT)**

#### **Epidemiology and burden of disease**

In Malawi HAT occurs in 5 out of 28 districts and mainly affects the rural poor. It is estimated that about 2.5 million people are at risk of infection (Nkhotakota Game Reserve, Kasungu National Park focus and in the North Vwaza Game Reserve focus). Malawi has one form of Human African Trypanosomiasis occurring in 3 geographically distinct foci. *Trypanosoma brucei rhodesiense* is the form of HAT and is found in the Nkhotakota Game Reserve, Kasungu National Park and Vwaza Marsh in the central and Rumphu and Mzimba districts in northern Malawi. This later focus shares a border with Eastern Zambia. Wild animals are the main reservoirs for this acute form of HAT. HAT is transmitted by tse-tse flies

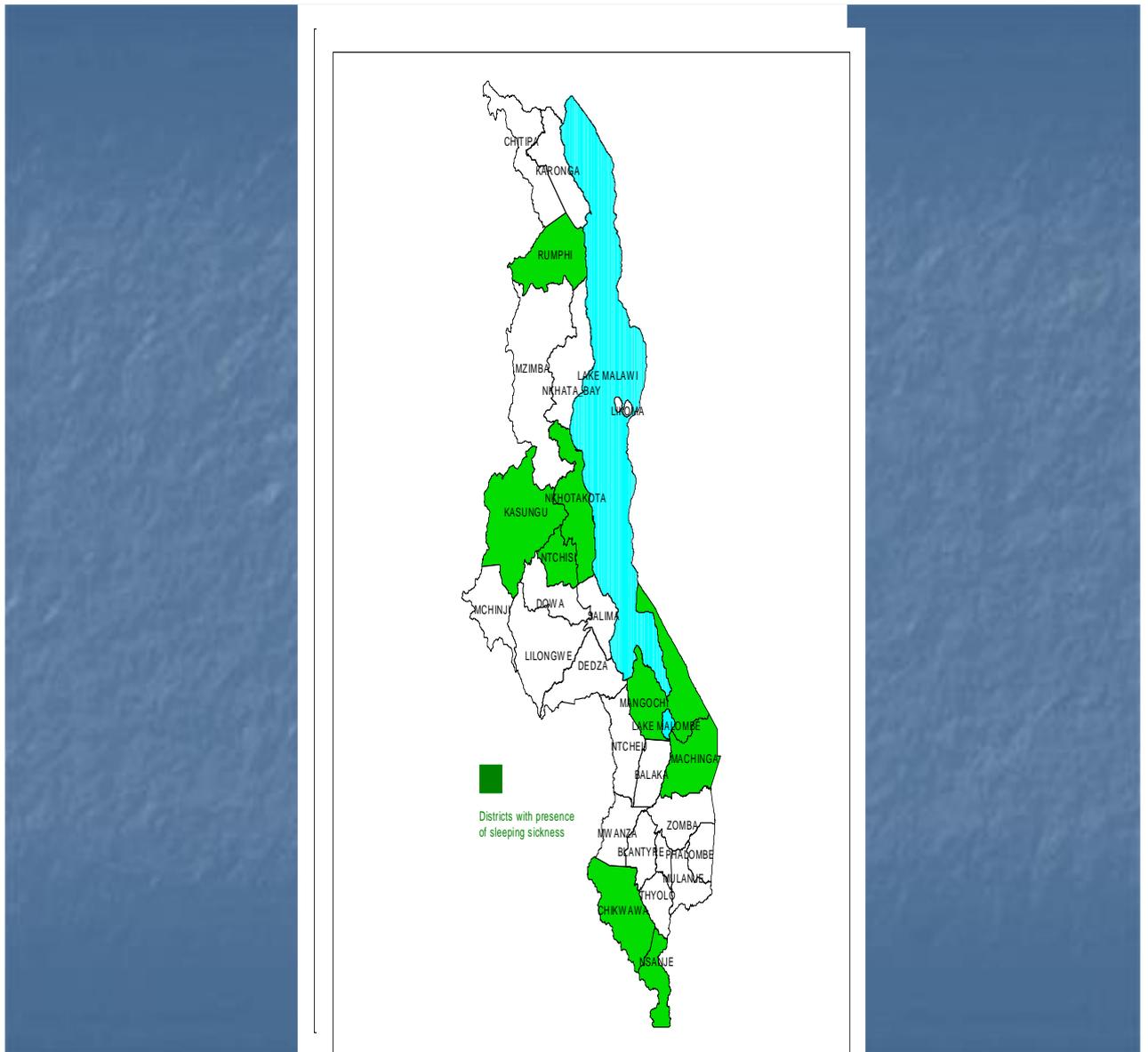
#### **Past and current interventions and achievements**

Case detection is mainly through passive and active screening (on a limited scale). All diagnosed cases are treated with recommended drugs (Suramin for early stage disease while Melarsoprol for late stage). Case management centres have been established in 5 district hospitals and all central hospitals across the country.

With support from East Africa Network for Tsetse and Trypanosomiasis, key health staff were trained by experienced and specialized trainers from Uganda in 2006. With support from the Pan African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC) initiative, advocacy and social mobilisation have been revitalised in the last two years.

The programme has functional diagnostic and treatment centres at district level in the endemic districts and all central hospitals. The drugs are available through a donation program. PATTEC under the project creation of sustainable Tsetse and Trypanosomiasis Free Areas project has supported passive case detection by provision of lab supplies and reagents in all treatment centres in the *T.b.rhodesiense* focus. However, most of the support towards program activities has been from WHO, Foundation of Innovative New Diagnostics (FIND) and Ministry of Health.

Figure 11: Map Showing Current and Old foci of HAT in Malawi



**Table 3.5:** Disease: HAT

District	Location/ Site	Prevalence (numbers/ rate/proportion)	Method used	Year of survey & Reference	GPS coordinates
Nkhotakota	Nkhotakota Game Reserve	1	Passive and Active	2014: MoH Report	
Kasungu	Kasungu National Park	2	Passive and Active	2013, MoH Report	
Rumphi/Mzimba	Wvaza Marsh	33	Passive and Active	2013, MoH Report	
Ntchisi	Nkhotakota Game Reserve	2	Passive and Active	2009, MoH Report	

### 1.3.1.8. Buruli Ulcer

#### Definition , aetiology and transmission and presentation

Buruli ulcer is an ulcerative skin condition that may also involve tissues and bones surrounding it. The condition is caused by *Mycobacterium ulcerans*. Buruli ulcer is the most common Mycobacterial infection of humans after Tuberculosis and Leprosy. Mode of transmission is not known but recent evidence suggests that aquatic insects (*Naucoris* and *Dyplonychus* species) may be involved. Trauma to contaminated skin sites appears to be the means by which the organisms enter the body. There is little evidence of transmission from person to person. No racial or social group exempt. Infection with human immunodeficiency virus (HIV) is not a known risk factor. The condition manifests as papules, nodules, plaques, oedematous forms and ulcers with deeply delineated edges. Usually the ulcers will have been noted not to be responding to the normal conventional ulcer management and treatments. The name “Buruli ulcer” comes from a county (a swampy district) in Uganda where many cases were reported in the 1950s.

#### Epidemiology

The disease often occurs in people who live or work close to the rivers and stagnant bodies of water. Changes in the environment, such as the construction of irrigation systems and dams, seem to have played a role in the resurgence of Buruli ulcer. The disease is more severe in impoverished inhabitants of remote rural areas. About 70% of those affected are children under the age of 15 years. Mortality due to the disease is low, but morbidity is high. Complications include contractures, deformities, amputation of limbs, and involvement of eyes, breasts and genitalia.

The prevalence of the disease is not accurately known. The disease exists or is suspected in over 30 countries, but the majority of cases are in West Africa. In Malawi Buruli ulcer had never been diagnosed until recently that a number of districts were noticing ulcers that were not responding to the conventional ulcer management even with the use of several broad-spectrum antibiotics. In 2005 WHO hired in consultants to

look into Buruli ulcer prevalence in Malawi and these consultants actually got one case of Buruli ulcer confirmed in 2005 and by the year 2008 June the Malawi College of Medicine had already registered 56 cases. The consultants recommended the formation of Buruli Ulcer Technical Committee in Ministry of Health to spear head the program and this was formed and Leprosy and Skin Diseases Control Program was asked to take on board Buruli ulcer and establish the Buruli Ulcer Control Program. But due to in-availability of funding, this program failed to take off. WHO had allocated some funds to Buruli ulcer but was inadequate for even the first workshop for the Buruli Ulcer Technical Committee members in which the planning for the way forward was supposed to be the main subject. The Ministry through the directorate of Clinical Services did not have funds to supplement to this activity and it was called off at the eleventh hour till this date. The Ministry therefore has planned to do mapping of the disease first and then go ahead and plan for the Buruli ulcer control and this requires assistance.

### 1.3.1.9. NTD Co-endemicity in Malawi

Region	District	Diseases							
		Preventive Chemotherapy Diseases					Case Management Diseases		
		Oncho	LF	Schisto	STH	Trachom a	HAT	Leprosy	Buruli Ulcer
South	Balaka	0	+	+	+			+	
	Blantyre	+	+	+	+			+	
	Chikwawa	+	+	+	+	+		+	
	Chiradzulu	+	+	+	+			+	
	Machinga	0	+	+	+			+	
	Mangochi	0	+	+	+			+	
	Mulanje	+	+	+	+			+	
	Nsanje	0	+	+	+	+		+	
	Thyolo	+	+	+	+			+	
	Phalombe	+	+	+	+			+	
	Mwanza	+	+	+	+			+	
Zomba	0	+	+	+			+		
Neno	+	+	+	+			+		
Centre	Dedza	0	+	+	+			+	
	Dowa	0	+	+	+			+	
	Kasungu	0	+	+	+	+	+	+	
	Likoma	0	+	+	+			+	
	Lilongwe	0	+	+	+	+		+	
	Salima	0	+	+	+	+		+	
	Mchinji	0	+	+	+	+		+	
	Ntchisi	0	+	+	+		+	+	
Ntcheu	0	+	+	+			+		
North	Mzimba	0	+	+	+		+	+	
	Nkhata Bay	0	+	+	+			+	
	Nkhotakota	0	+	+	+	+	+	+	
	Chitipa	0	0	+	+			+	

	Karonga	0	+	+	+			+	
	Rumphi	0	+	+	+		+	+	

### 1.3.1.10. NTD mapping status diseases

The following table summarises the outstanding mapping needs for endemic NTDs in Malawi.

Buruli ulcer, Leishmaniasis and HAT are the programmes that require mapping.

Endemic NTD	Total # Districts	No. of endemic districts	No. of districts mapped or known endemicity status	No. of districts remaining to be mapped or assessed for endemicity status
LF	29	27	27	0
Oncho	29	8	8	0
STH	29	29	29	0
Trachoma	29	15	24	5
Schisto	29	29	29	0
Leprosy	29	29	29	0
Buruli ulcer	29		Not mapped	29
Leishmaniasis	29		Not mapped	29
HAT	29	5	5	0

### 1.3.2. NTD programme implementation

The past and on-going interventions to control PCT and CM NTDs in Malawi are shown in the following table

**Table 6.1: The summary intervention information on existing preventive chemotherapy programmes**

NTD	Date programme started	Total No. of districts targeted	No. of districts covered *(Geographic coverage)	Total population in target district (2014)	No. of (percentage) Population Covered (2014)	Key strategies used	Key partners
LF	2008	27	27	14,989,401	12, 443,745 (83.0%)	MDA	Liver-Pool School of Tropical diseases, WHO, Merck & Co, GSK
Oncho	1984	8	8	2,183,189	1,810,709 (82.9%)	MDA	WHO, Tea association of Malawi; Sightsavers, Merck & Co

Trachoma	2011	7	7	4,695,998		MDA	Sightsavers, Lion's Aid Norway, WHO, CBM, Pfizer
SCHITO	2004	29	29	4,112,215		School based & Community based treatments	SCI, WB WFP, JICA, GTZ, World Vision, ODA, Save the Children, WHO
STH	2004	29	29	4,112,215		CHDs, School & based treatments	SCI, WB school prg. WFP, WHO, UNICEF

Table 6.2.1: Summary of intervention information on existing CM programmes

For leprosy and HAT the programmes have been in operation for sometime whilst Buruli ulcer and Leishmaniasis programmes are yet to start and require mapping first

NTD	Date programme started	Total districts targeted	No. of districts covered (geographical coverage*)	(%) covered	Key strategies used	Key partners
HAT	1996	5	5	100%	Active case finding and health facility treatment plus Vector Control	WHO, FIND, PATTEC
Leprosy	1979	29	29	100	Active case finding and health facility treatment	WHO
Buruli ulcer	Not started	29			Active case finding and health facility treatment- Mapping	WHO
Leishmaniasis	Not started	29			Active case finding and health facility treatment- Mapping	WHO

\*Geographical coverage =  $\frac{\text{No. of districts covered by the programme}}{\text{Total no. of endemic districts in the country}}$

### 1.3.3. gaps and priorities

A SWOT analysis was carried out on the current status of NTD control programme (Table 7) which identified gaps and priorities which have been categorized as follows: Coordination and Management, Partnerships and Monitoring and Evaluation

#### 1.3.3.1. Coordination and Management

Previously implementation of NTDs has been weak due to uncoordinated planning and management and as such there have been vertical programmes such as Onchocerciasis, Schistosomiasis, LF, Trachoma, HAT and Leprosy. The vertical approach does not benefit the community where NTDS exist. There is need for capacity building in all related skills such as case management, laboratory diagnostics, drug distribution. There is also need to set up the secretariat for NTD.

#### 1.3.3.2. Partnerships

A network of partners interested in NTDs exists within the country. However, resources for implementing NTDs remains a challenge since there is little commitment to financing NTDs by partners who prefer supporting specific programmes. There is need for continued advocacy towards allocating resources to NTDs as a package.

#### 1.3.3.3. Surveillance, Monitoring and Evaluation

The Ministry of Health has functional HMIS and IDSR systems in place. However, there is lack of an integrated NTD M&E framework and weak data management. There is need for incorporation of data management and integrated NTD M&E into the existing systems.

**Table 7: SWOT analysis of NTD programme**

Strengths	Weakness	Strengths counteracting weaknesses	Opportunities	Threats	Opportunities counteracting threats
Advocacy, coordination and partnerships					
<ul style="list-style-type: none"> <li>Incorporation of NTDs in MOH strategic plan.</li> <li>National plan of action for NTDs in existence</li> <li>Political will</li> </ul>	<p>Inadequate resources for implementation of NTD</p> <p>Inadequate Private /Public partnership for NTD</p>	<p>Availability of partners</p> <p>Availability of National Programme Managers</p>	<p>Increased partnership and collaboration.</p> <p>Adequate Technical experts available from academic, research and</p>	<p>Un predictable donor support</p>	<p>Integration</p>

<ul style="list-style-type: none"> <li>• Availability of partnerships</li> <li>• Existing defined structure for management of NTD at District level</li> <li>• Availability of national Programme Managers</li> </ul>	Poor coordination		<p>health institutions.</p> <p>Partners support for master plan of action development for NTDs.</p> <p>Integration /Co-implementation</p>		
Planning for results, resource mobilization and financial sustainability					
<ul style="list-style-type: none"> <li>• NTD incorporated in the national strategic plan 2011-2016</li> <li>• Increased and sustained drug donations</li> </ul> <p>Political will</p>	<ul style="list-style-type: none"> <li>• Inadequate funding</li> <li>• Inadequate resources to implement NTD programmes</li> </ul>	Govt. commitment to support the programme	<p>Increased chances to lobby during planning meetings</p> <p>Drug donations</p>	Donor fatigue	NTD within MOH strategic framework
Scale up access to interventions, including treatment & service delivery, drug supply, logistics & capacity building					
<ul style="list-style-type: none"> <li>• Available of trained manpower</li> <li>• Adequate supply of donated drugs.</li> <li>• Training tools for treatment available.</li> <li>• Teachers and Drug distributors</li> </ul>	<ul style="list-style-type: none"> <li>• Weak coordination for delivery &amp; distribution of drugs.</li> <li>• Weak drug management</li> </ul> <p>Poor data management</p>		<p>High Primary school enrolment and retention</p> <p>Community participation</p>	<p>Poor response from target population</p> <p>Poor cooperation from drug distributors</p>	
NTDS monitoring, evaluation, surveillance & operations research					
<ul style="list-style-type: none"> <li>• Tools available for M&amp;E</li> </ul>	Inadequate funding		Technical experts available	Difficult terrain	

<ul style="list-style-type: none"> <li>Tools available for surveillance</li> </ul>	<p>Inadequate capacity</p> <p>Lack of integrated NTD M&amp;E</p>		<p>Willing programmes and partners to support integrated M&amp;E</p>	<p>Unfavourable weather conditions</p>	
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## PART TWO: NTD STRATEGIC AGENDA

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### 2.1. Overall NTD Programme Vision, Mission and Goals

**Vision:** A nation free from NTD

**Mission:** to provide a comprehensive range of quality, equitable and efficient health services to all people in Malawi by creating an enabling environment for health promoting activities and reduction of the burden of NTDs to a level of no public health significance in Malawi.

**Strategic Goal:** to improve the health status of all the people of Malawi by eliminating all targeted NTDs.

### 2.2. Guiding Principles and strategic priorities

The guiding principle for the programme will involve consultative process, transparency, inclusiveness, community engagement in order to eliminate NTDs in Malawi.

**Table 7: Strategic framework summary**

Strategic priority	NTD Strategic Objectives
Strategic Priority 1: Strengthen government ownership, advocacy, coordination and partnerships	<ul style="list-style-type: none"> <li>Strengthen coordination at national, district and community levels</li> </ul>
	<ul style="list-style-type: none"> <li>Strengthen and foster partnerships for the control, elimination at national and district levels</li> </ul>
	<ul style="list-style-type: none"> <li>Enhance high level reviews of NTD programme performance and use lessons learnt to enhance advocacy, awareness and effective implementation of targeted interventions.</li> </ul>
	<ul style="list-style-type: none"> <li>To strengthen advocacy, visibility and profile of NTD control, elimination and eradication interventions at all levels in Malawi.</li> </ul>
Strategic Priority 2: Enhance planning for results, resource mobilization and financial sustainability of national NTD	<ul style="list-style-type: none"> <li>Support districts to develop integrated plans and develop annual operational plans for the control and elimination of targeted diseases.</li> </ul>

programmes	<ul style="list-style-type: none"> <li>Enhance resource mobilization approaches and strategies national and district levels.</li> </ul>
	<ul style="list-style-type: none"> <li>Strengthen the integration and linkages of NTD programme and financial plans into SWAP.</li> </ul>
	<ul style="list-style-type: none"> <li>Update/formulate national policy and adapt WHO guidelines and tools for NTD programme in Malawi.</li> </ul>
Strategic Priority 3: Scale-up access to interventions, treatment and system capacity building	<ul style="list-style-type: none"> <li>Scale up an integrated preventive chemotherapy, including access to STH, Schistosomiasis and trachoma interventions.</li> <li>Scale up integrated case-management-based diseases interventions.</li> <li>Strengthening integrated vector management and environmental measures for targeted NTDs.</li> <li>Strengthen capacity at national level for NTD programme management and implementation.</li> <li>Scale down an integrated preventive chemotherapy, including access to LF and Onchocerciasis, interventions.</li> </ul>
Strategic Priority 4: Enhance NTD monitoring and evaluation, surveillance and operations research	<ul style="list-style-type: none"> <li>Enhance monitoring of national NTD programme performance and outcome.</li> <li>Strengthen the surveillance of NTDs and strengthen the response and control of epidemic prone NTDs</li> <li>Support operational research, documentation and evidence to guide innovative approaches to NTD programme interventions.</li> <li>Strengthen integrated data management systems and support impact analysis</li> </ul>

### 2.3. National NTD programme goals, objectives, strategies and targets

The NTD Programme brings together a number of disease-specific programmes. However, it maintains the disease-specific goals, objectives, and strategies within the context of the one overall NTD Programme. Integration is promoted as a cost-effective approach that maximizes use of limited resources.

**Table 8: Summary of NTDs disease specific goals and objectives**

NTDs	NTD PROGRAMME AND GLOBAL GOAL	NATIONAL GOALS	OBJECTIVES	INTERVENTION S/STRATEGIES	DELIVERY CHANNELS
Lymphatic filariasis	Elimination as a global public health problem by 2020	To eliminate LF as a public health problem by 2015	<ol style="list-style-type: none"> <li>1. To interrupt transmission of LF.</li> <li>2. To alleviate and prevent disability due to LF.</li> </ol>	<ol style="list-style-type: none"> <li>1. Mass drug administration to all eligible population annually using ivermectin and albendazole.</li> <li>2. Vector control in collaboration with malaria control through use of insecticide impregnated nets.</li> <li>3. Personal hygiene and exercise of affected limbs (HBC) and hydrocoele surgeries.</li> </ol>	Community based campaigns, CDTI, Indoor residual spraying, Health centre based ITNs, Surgery camps Home based care

Onchocerciasis	To control and elimination where feasible with CDTI and other effective interventions by 2020	To eliminate Onchocerciasis as a public health problem by 2015	To sustain 100% geographical coverage and more than 80% therapeutic coverage in hyper and meso endemic areas.	Mass Drug Administration Vector Control	CDTI Larviciding
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Schistosomiasis	Treat at least 75% of all school aged children at risk by 2020	To reduce morbidity due to schistosomiasis to a level where it is no longer of public health significance by 2020	<p>To implement MDA in 100% of the districts by 2015</p> <p>To achieve at least 75% therapeutic coverage</p> <p>To eliminate heavy intensity infections of schistosomiasis in school aged children and high risk communities by 2015</p> <p>To reduce the prevalence of schisto in school aged children to less than 10%</p> <p>To reduce incidence of infected snails in all Lakeshore resorts to less than 2%</p>	<p>Mass Drug Administration with praziquantel in school age children and high risk communities</p> <p>Health education and promotion of behavioural change</p> <p>Advocate for improvement of hygiene and safe water supply</p> <p>Vector control</p>	<p>Schools and communities in high risk areas</p> <p>Health centers</p> <p>Lakeshore resorts (for vector control)</p>
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<p>Soil transmitted helminthiasis</p>	<p>Treat at least 75% of all school aged children by 2020</p>	<p>To reduce morbidity due to soil transmitted helminthiasis infections to a level where it is no longer of public health significance by 2020</p>	<p>To implement MDA in 100% of the districts by 2015</p> <p>To achieve at least 75% therapeutic coverage</p> <p>To eliminate heavy intensity infections of STH in pre and school aged children and high risk communities by 2015</p> <p>To reduce the prevalence of STH in school aged children to less than 10%</p>	<p>Mass Drug Administration with Mebendazole/ Abendazole in school age children and high risk communities</p> <p>Health education and promotion of behavioural change</p> <p>Advocate for improvement of hygiene and safe water supply</p>	<p>Schools and communities in high risk areas</p> <p>Health centers</p> <p>Child Health Days</p>
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Trachoma	Elimination as blinding disease by 2020	Elimination of blinding Trachoma by 2020	<p>To clear the backlog of surgeries in 10 endemic districts by 2015</p> <p>To reduce Trachoma Trichiasis cases to less than 0.1% by 2015</p> <p>To achieve at least 85% of mass distribution of antibiotics in the 10 endemic districts</p> <p>To achieve 100% coverage of communities with health promotion activities in the 10 endemic districts</p>	<p>Surgeries, Antibiotics, Facial Washing and Environmental improvement (SAFE)</p> <p>Advocacy for increased safe water and sanitation coverage</p>	<p>Surgery camps</p> <p>MDA</p> <p>Clinic based treatments</p> <p>Community campaigns</p>
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Leprosy	Elimination of Leprosy as public health problem at national by 2005, and then elimination at sub-national levels by 2020.	To reduce the number of Grade 2 disabilities by 35% among leprosy cases by 2020	To sustain national elimination target  To reduce the number of leprosy cases by district to less than 1 case per 10,000.  To reduce Grade 2 disabilities by district by 35%.	Early diagnosis and treatment of leprosy cases with MDT  Leprosy awareness campaigns  Community promotion and detection of leprosy cases	Capacity building of health workers  Community sensitization/mobilisation
Human African Trypanosomiasis	Elimination as public health problem by 2020	Eliminate as a public health problem by 2020	To scale up case detection and treatment  To increase the coverage of surveillance of at risk population from 60% to 100%  To reinforce surveillance in all endemic districts	Vector control  Improvement of access to HAT diagnostic tools and drugs for treatment  Strengthening advocacy and social mobilization at all levels	community involvement in HAT activities  Partnership and intersectoral collaboration.  capacity building of health workers on case diagnosis and management of HAT.

Buruli Ulcer	Elimination as public health problem by 2020	Elimination as public health problem by 2020	To establish the prevalence of Buruli Ulcer	Training of Health workers	Capacity building of Health workers
Leishmaniasis	Elimination as public health problem by 2020	Elimination as public health problem by 2020	To establish the prevalence of Buruli Ulcer	Training of Health workers	Capacity building of Health workers

## Onchocerciasis milestones

Indicators	2015	2016	2017	2018	2019	2020
1 Completed mapping/delineation of oncho and determined oncho endemic areas and the population at risk	28 (100%)					
2 Begun implementation of oncho MDA in districts requiring MDA including loiasis co-endemic areas	8 (100%)					
3 achieving 100% geographical coverage in Oncho endemic districts	8 (100%)					
4 Conducted more than 10 rounds of MDA in all endemic IUs with regional/State coverage more than 65%	8 (100%)					
5 Conducted Phase 1a Epid evaluation activities in at least 50% of oncho endemic IUs after at least 10 rounds of MDA	8 (100%)					
6 Conducted and Passed epidemiological and entomological assessment in 50% of IUs	8 (100%)					
7 Present "the dossier " for in-country verification of absence of oncho transmission	8 (100%)					
8 Proportion and number of IUs where treatment has been stopped	0	8 (100%)				

7 Present the dossier for in-country verification of absence of onchocerciasis transmission	(100%)			
8 Proportion and number of IUs where treatment has been stopped	0	8 (100%)		


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## PART 3: OPERATIONAL FRAMEWORK

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The operational framework component of the NTD master plan should describe how a country will in practice implement the planned activities. The plan should also explain what the country’s capacity needs are, how resources will be mobilized, how potential risks will be addressed, and how the sustainability of the project achievements will be ensured. This part is an essential component and should clearly explain how the programme outcomes will be attained.

It is important that the operational plan is produced in consultation with all stakeholders in order to allow wide coverage of the programme, harmonize and align available resources, avoid duplication of activities and waste of resources and to yield desired results even within the existing constrained resources for NTD control.

### 3.1. SCALING UP ACCESS TO NTD INTERVENTIONS TREATMENT AND SERVICE DELIVERY CAPACITIES

#### 3.1.1. Scale up preventive chemotherapy interventions

Preventive chemotherapy is a group of activities that leads to and includes mass distribution of drugs to target populations. A number of these activities are cross-cutting for more than one of the five diseases that use preventive chemotherapy as their main strategy. Depending on the diseases targeted, and their overlaps, there are variations in types and numbers of the different drugs combinations distributed at a particular time. The combination of MDA types will vary depending on the disease overlaps. Annex 2.1, 2.2, and 2.3 describe the scale up of PCT interventions.

#### 3.1.2. Mass Drug Administration

MDA is the main strategy being used for control of some of the NTDs in Malawi. The diseases which are targeted with this strategy are Ochocerciasis, Lymphatic filariasis, STH, Schistosomiasis and Trachoma.

The table 13 below depicts the target disease combination, the types of MDAs, methods (delivery channels) that will be used to achieve the stated goals and objectives as well as the timing of delivery of MDA. MDA types, delivery channels, timing of delivery, number of districts, requirements and other mass disease control interventions in the district.

**Table 13 : Types of Mass Drug Administration**

<b>Cross Cutting MDA Types</b>	<b>Delivery Channels</b>	<b>Timing of Treatments</b>	<b>Disease combination</b>	<b>Requirements</b>	<b>Target (districts List)</b>	<b>Other mass disease control interventions</b>
MDA 1 Integrated treatment with ivermectin and albendazole	Community based campaigns, CDTI, School based campaigns	Month 10 week 1-2	Lymphatic Filariasis, Onchocerciasis and STH,	-Training of Health Personnel -community volunteers. -Social Mobilization. -Supervision. -Production of tools -Logistics for drug distribution and management	29	EPI campaigns,  ITN distribution and Child health days
Treatment with Zithromax for Trachoma	Community based campaigns CDTI	Month 10 week 4	Trachoma	Training of Health Personnel -Social Mobilization. -Supervision. -Production of tools -Logistics for drug distribution and management	7	-
T1 Treatment with praziquantel	School based	Month 10, 1 Week after MDA 1	Schistosomiasis and STH,	Training of Health Personnel -Training of teachers & community volunteers. -Social Mobilization. -Supervision. -Production of tools -Logistics for drug distribution and management	29	EPI campaigns,  ITN distribution and Child health days

**MDA1= Ivermectin + Albendazole, T1= Praziquantel + Albendazole, T 2= Praziquantel only, MDA 4 = Azithromycin only**

TABLE 14: Activities for Strategic Priority 1 – Scale up Access to PCT Interventions

Activity	Details (Sub-activities)	Time frame	Resources needed
<b>Strategic Objective 1: Scale up an integrated preventive chemotherapy, including access to interventions for lymphatic filariasis, soil transmitted helminthiasis, onchocerciasis, schistosomiasis and trachoma</b>			
Mass Drug Administration	Drug procurement	2015 - 2017	subsistence allowances, fuel and lubricants
	Training hospital staff	2015-2017	Subsistence allowances, fuel, stationery, Hall hiring, refreshments
	Transportation of drugs	2015 - 2017	Subsistence allowances, fuel and lubricants
	Training Community Health workers and CDDS / volunteer	2015 - 2017	Subsistence allowances, fuel and lubricants, stationery, Hall hire, refreshments
	Community sensitization	2015 - 2020	Subsistence allowances, Hall hire, fuel, stationery,
	Supportive supervision	2015 - 2020	Subsistence allowances, fuel, stationery
	Recording and reporting	2015 - 2020	Stationery
Surgery (TT and Hydrocele)	-Training of health workers Active case finding Community mobilisation Elective surgery -Mobile surgery camps	2015 - 2020	Subsistence allowances, fuel, stationery , surgery kits

### 3.1.3. Scale up of NTD case management interventions

The case management package of activities includes identification (active and passive case finding) and management of patients of a specific NTD.

Table 11: Activities for case management interventions

Activity	Details (Sub-activities)	Timeframe	Resources needed
<b>Strategic Objective 1:</b> Scale up integrated case-management-based disease interventions, especially the following : (List of interventions for major CM-NTDs)			
Hydrocoele surgeries	- Training Hospital based personnel -Elective surgery -Mobile surgery camps	2015-2020	Personnel allowances, fuel, stationery, surgery kits, Hall hiring

HBC Lesions -Lymphoedema Elephantiasis/lymph edema disability	Training Community Health workers, families patients and volunteers	2015-2020	Personnel allowances, fuel, stationery, HBC kits
Trichiasis surgeries	Training of health workers	2015-2020	Personnel allowances, Hall hire, fuel, stationery, surgery kits
Trichiasis camps	-TT surgical camps in 28 districts -Support supervision by the programme during surgical camps	2015-2020	Allowances, Fuel, Lid rotation kits, and disposable supplies
Rehabilitation for lymphoedema	Training H/workers, follow up supervision	2015-2020	Personnel allowances, fuel, stationery
Morbidity care of lymphedema	Training of H/workers and volunteers	2015-2020	Personnel allowances, fuel, stationery
Morbidity care of Leprosy	Training of H/workers	2015-2020	Personnel allowances, fuel, stationery
Provision of drugs	-Procurement of drugs Clearance of drugs, reagents and Kits  -Delivery of drugs Strengthen the existing drugs stock management system	2015-2020	Purchase of drugs and assorted supplies  Clearance fees Fuel, Allowances
Mapping disease distribution-buruli ulcer and leishmaniasis	Carrying out surveys	2015	Rk39 Kits, GPS, Survey maps
Advocacy	Sensitization meetings with community members	2015-2020	Funds for preparation, workshop and meeting
Community social mobilization	Development of IEC materials for NTDs	2015-2020	IEC materials, Fuel, allowances, radio messages and air time
Surveillance	Train surveillance teams  Develop surveillance tools and system  Develop integrated forms for reporting Adverse Effects  Cross border surveillance meetings	2015-2020	Training modules Fuel and vehicle maintenance

### 3.1.4. Scaling up NTD transmission control Interventions

Transmission Control activities are cross-cutting for both vector-borne and other diseases that do not involve a vector for their transmission. In effect, transmission control interventions are complementary to preventive chemotherapy and case-based interventions and as such they need to be conducted in all NTD endemic areas. These activities include vector control, environment measures and health education. Depending on the types of diseases targeted, and their overlaps, there may be variations in types of activities that require to be implemented. Table 12 and 13 depicts PHASE activities

Where by

- P – Preventive chemotherapy
- H - Health education
- A -Access to clean water
- S- Sanitation
- E - Environmental manipulation

**Table 22: Intervention packages for Transmission Control**

CROSS CUTTING INTERVENTIONS	TARGETED NTDS	REQUIREMENTS	OTHER OPPORTUNITIES FOR INTEGRATION	NON-NTD FOR
<b>Vector Control</b> <ul style="list-style-type: none"> <li>• Insecticide treated nets</li> <li>• Mosquito control</li> <li>• Indoor residual spraying (IRS)</li> <li>• Environmental management</li> </ul>	Lymphatic Filariasis Leishmaniasis HAT Onchocerciasis Schistosomiasis Trachoma	- ITNs, Insecticides for IRS -Plastering of walls -Bti (Larvaciding) -Traps for Tsetse flies -Traps for snails	Malaria vector control, Integrated Vector Management (IVM).	
<b>Clean water and sanitation</b>	STH Trachoma Schistosomiasis	-cement -bricks -water pumps	WATSAN Water Department NGOs	

The table below indicates summary on the key activities planned to carry out in order to implement the transmission control package as defined above.

Table 23: Activities for disease transmission control

Activity	Details (Sub-activities)	Timeframe	Resources needed
<b>Strategic Objective 3: Strengthen integrated vector management and other "PHASE" interventions for the targeted NTDs</b>			
<b>Vector control</b>	<ul style="list-style-type: none"> <li>• Promotion and distribution of insecticide treated nets</li> <li>• Conduct In-door residual spraying</li> <li>• Promotion of Environmental sanitation</li> <li>• Conduct Larviciding</li> <li>• Set up Traps for Tsetse fly</li> <li>• Conduct Aerial spraying (PPP)</li> <li>•</li> </ul>	<b>2015-2020</b>	ITNs, - Insecticides for Indoor Residual Spraying. -Bti -Traps
			IEC materials Meetings-
<b>Clean water and sanitation</b>	<ul style="list-style-type: none"> <li>- Promotion of Environmental sanitation</li> <li>-Health promotion on water , sanitation and personal hygiene</li> </ul> <p>Inter-sectoral collaboration</p>	<b>2015-2020</b>	allowances, fuel, transport, venue, personnel

### 3.2. PHARCOVIGILANCE IN NTD CONTROL ACTIVITIES

The NTDs programme will work closely with the Medicines and Poisonous Board to ensure the safety and efficacy of all pharmaceutical products used to meet the programme goals. This will involve early detection and reporting of unknown suspected Serious Adverse Events (SAEs) and also identification and reporting of any poor quality medical products that could have found their way into the system (Table 26). Health workers shall participate in drug administration and management of SAE. A pharmacist will be attached to the programme to coordinate these activities.

**Table 26: Activities for strengthening pharmacovigilance in NTD programmes.**

Activity	Details (Sub-activities)	Timeframe	Resources needed
<b>Strategic Objective : strengthening already existing pharmacovigilance system for NTD commodities</b>			
Strengthen NTD pharmacovigilance system	training, sensitization of health workers on pharmacovigilance	2015-2016	Allowances, stationery, fuel, transport, venue
Develop a rapid reporting system of serious adverse events	Facilitate mass printing and dissemination of already existing reporting tools	2015-	Allowances, stationery, fuel, transport, venue, funds for printing
	Provide additional training for data management for pharmacovigilance	2015-	Allowances, stationery, fuel, transport, venue
	carry out post marketing surveillance	2015-	Allowances, stationery, fuel, transport,
Carry out drug safety studies	Develop surveillance tools and systems for monitoring drug safety <ul style="list-style-type: none"> <li>Conduct periodic sampling of drugs</li> <li>Train surveillance team</li> </ul>	2015-2020	Allowances, stationery, fuel, transport, conference package

### 3.2.1. STRENGTHENING CAPACITY AT NATIONAL LEVEL FOR NTD PROGRAM MANAGEMENT AND IMPLEMENTATION

This section describes what is needed to strengthen the management and operational capacities of the NTD programme staff at different levels. The Table below indicates planned key activities and resources needed

**Table 24: Activities and resources needed for strengthening capacity for NTD programme**

Activity	Details (Sub-activities)	Timeframe/ Frequency	Resources needed
<b>Strategic Objective 4: Strengthening capacity at national level for NTD programme management and implementation</b>			
Capacity building	training programme managers (Leadership, Resource mobilization and advocacy , Financial	2015-2020	Training modules, allowances, fuel, transport, venue, personnel

	Management, Reporting etc)		
	Post graduate training	2015-2020	Training modules, allowances, fuel, transport, venue, personnel
		2015-2020	Training modules, allowances, fuel, transport, venue, personnel
Transport	Purchase of	2015-2020	Funds
Office Equipment	Purchase of office equipment (computers and furniture)	2015-2020	Funds
Infrastructure	Construction of building such as labs for sentinel sites	2015-2020	Funds

### 3.3. Scaling up Plan

Preventive chemotherapy is a time-bound activity which is determined by attainment of the pre-determined end-point. The impact of MDA will result in prevalence rates of the target diseases to fall below the threshold for requiring MDA. The impact assessments for LF and Onchocerciasis were conducted between 2011 and 2014. The preliminary results are showing that the two diseases have been eliminated in the country. However, the country is waiting for certification by the World Health Organization. The impact assessment for trachoma is ongoing and MDA is being scaled up in other endemic districts. Table below demonstrates scaling up and scaling down plan for NTDs.

**Table 16 : Scale-up and Scale-down Plan**

NTD	Total no. districts requiring MDA	Total at risk population (2014)	2015 No districts and total population to be treated	2016 No districts and total population to be treated	2017 No districts and total population to be treated	2018 No districts and total population to be treated	2019 No districts and total population to be treated	2020 No districts and total population to be treated
<b>PCT IMPLEMENTATION (MDA)</b>								
LF	27	27 14,989,401	27 14,193,566	27	27	0	0	0
Oncho	8	8 2,183,189	8 2,244,318	8 2,307,159	8 2,371,759	0	0	0

Schisto	29	29	29	29	29			
STH	27		29	29	29			
Trachoma	7	7	3,924,429	4,911,219				
<b>IDM IMPLEMENTATION</b>								
HAT		5	5	5	5	5	5	5
LEISH		To be mapped	To be mapped	-	-	-	-	-
BU		To be mapped	To be mapped	-	-	-	-	-
Leprosy		29	29	29	29	29	29	29

### 3.3.1. ENHANCE PLANNING FOR RESULTS, RESOURCE MOBILISATION AND FINANCIAL SUSTAINABILITY

The following table describes how the existing and planned system for planning NTD activity at all level will continually observe the prevailing trends in health priorities, financing and donor strategies. This will lead to identification of best strategies for NTD resources mobilization, partnership building and financial sustainability. The objective primarily aims at generating adequate resources as well as establishing enabling environment that will suit resource mobilization for the multi- year comprehensive NTD plan

**Table 11: Activities for implementing strategic priority 2: Enhancing planning for results, resource mobilization and financial sustainability of national NTD programmes.**

Activity	Details (sub-activities)	Time frame	Resources needed
Strategic objective 1: Support countries to develop integrated multiyear strategic plans and gender-sensitive annual operational plans for the control, elimination and eradication of targeted NTDs			
Workshop	Updating Master Plan including other stakeholders	2015	Resource persons and participants, allowances, accommodation, hall rental, meals, assorted stationary.
Launch the NTD master plan	Hold all NTDs stake holders meeting including from zones	2015	Resource persons and participants, allowances, accommodation, hall rental, meals, assorted stationary.
	ii. Launch of integrated NTD control program from zones	2015	Resource persons and participants, allowances, accommodation, hall rental, meals, assorted stationary. Banners, communication

Strategic objective 2: Enhance resource mobilization approaches and strategies at regional, national and sub-national levels for NTD interventions			
Develop an NTD resource mobilization strategy.	i. Hold meeting to develop resource mobilization strategy.	2015	Resource persons and participants, allowances, accommodation, hall rental, meals, assorted stationary, communication cost
Implementation of the resource mobilization strategy.	i. Hold meetings with multi lateral, bilateral and all NTD key stakeholders.	2015-2016	Resource persons and participants, allowances, accommodation, hall rental, meals, assorted stationary.
	Periodically update the resource mobilization strategy.	2015-2020	Personnel
Strategic objective 3: Strengthen the integration and linkages of NTD programme and financial plans into sector-wide and national budgetary and financing mechanisms			
Sensitize stakeholders and Government	Conduct advocacy meetings to NTD relevant stakeholders, including Ministry of Finance for inclusion of NTDs in the national health policies and strategy plans	2015-2020	Personnel
MOH planning review meetings	NTD Programme Managers participation in the MOH meetings	2015-2020	Personnel
Strategic objective 4: Support countries to develop and update national NTD policies and elaborate guidelines and tools to guide effective policy and programme implementation			
Review and update the National Health Policy	i. Participate in meetings to update the Health Policy and include NTDs programmes	2015-2020	Personnel allowance
2. Develop integrated NTD guide lines and tools	i. Hold meeting to develop and update NTD guidelines and tools ( e.g. training manuals for heath workers)	2015-2018	Resource persons and participants, allowances, accommodation, hall rental, meals, transportation, communication, assorted stationary.

### 3.3.2. Strengthening Government Ownership, Advocacy, Coordination and Partnerships

This section describes how NTDs control will be streamlined at the sector level to effectively establish longer term multi-sectoral involvement at various operating levels, as well as being responsive to the larger National Goals.

Table 10 shows the activities for strengthening government ownership, advocacy, coordination and partnership such as development of NTD Operational guidelines which will guide the implementation of the NTD control activities in the country

Table 10: Activities for implementing strategic priority 1: Strengthen government ownership, advocacy, coordination and partnership

Activity	Details (Sub-activities)	Timeframe/ Frequency	Resources needed
<b>Strategic Objective 1: Strengthen coordination mechanism for the NTD control programme at national and sub-national levels.</b>			
Establish programme management and coordination structure	Strengthen (task force) by nomination and appointment of committee members  Task force Meetings  Engage MOH participation in coordination meetings  Advocate for establishment of NTD secretariat	2015	Personnel, stationery, transport, fuel, allowances, venue
<b>Strategic Objective 2: Strengthen and foster partnerships for the control, elimination and eradication of targeted NTDs at national, district and community levels.</b>			
Partnership Coordination committees	Identify potential partners who can support and fund NTDs control activities  Engage partners in international advocacy and good will	2015	Personnel, stationery, transport, fuel, allowances, venue

Activity	Details (Sub-activities)	Timeframe/ Frequency	Resources needed
	ambassadors support Create forum to engage partners		
Community mobilization  Conduct multi-sectoral approach in phase activities	Develop training manual for community health workers Training and supporting community members on identification, referral and management of disability	2015-2020	Technical support Personnel, stationery, transport, fuel, allowances
Advocate for resource mobilization with local administration stakeholders as well external partners	Meetings	2015-2020	Personnel, stationery, transport, fuel, allowances, venue
Share the NTD master plan with line ministries, private sector, partners and stakeholders.	Meetings Launch	2015-2020	Personnel, stationery, transport, fuel, allowances, venue
<b>Strategic Objective 3 Enhance high level reviews of NTD programme performance and the use of lessons learnt to enhance advocacy, awareness and effective implementation.</b>			
Lobby for the incorporation of NTD programme as an agenda during mid year and annual SWAp reviews	Meeting	2015-2020	Personnel, stationery, transport, fuel, allowances, venue
<b>Strategic Objective 4: Strengthen advocacy, visibility and profile of NTD control elimination and eradication interventions at all levels.</b>			
Advocacy, communication and social mobilization	Advocate for government commitment in resource allocation for NTD programme, Carry out high level advocacy Launch, Health training in social mobilization Mass production Disseminate the	2015-2020	Personnel, stationery, transport, fuel, allowances, venue

Activity	Details (Sub-activities)	Timeframe/ Frequency	Resources needed
	Executive summary of the NTD multi-year plan to other sectors at the National and Sub National levels		

### 3.3.3. Monitoring and Evaluation

The following guiding principles have been considered in developing our M & E plan:

- i. A description of the existing system of M&E in the country including the HMIS and IDSR system and how NTD information fits in.
- ii. A description of the data flow from peripheral level to national level and periodicity
- iii. A plan for period independent evaluation (e.g. at least every 3 years for outcome and every 5 years for impact depending on the type of disease to be evaluated).

**Table 25b: Strategic priority 4: Enhancing NTD monitoring and evaluation, surveillance and operations research.**

Activity	Details (Sub-activities)	Timeframe/Frequency	Resources needed
<b>Strategic Objective 1: Enhancing NTD monitoring evaluation, surveillance and operations research</b>			
• Assessment of existing M&E system for NTDs	Review meeting s	2015-2020	Personnel allowances, fuel, stationery/venue
• Develop M&E indicators	Meetings	2015-2017	Personnel allowances, fuel, stationery/venue
• Recording and reporting process and forms	Meeting	2015-2020	Personnel allowances, fuel, stationery/venue
Conduct surveys	Evaluation surveys(MDA Impact)	2015-2020	Personnel allowances, fuel, stationery/venue
	Conduct transmission assessment surveys	2015-2020	Personnel allowances, fuel, stationery/venue
• Build capacity at all levels for M&E on NTDs	Trainings	2015-2020	Personnel allowances, fuel, stationery/venue

• Integrate the NTDs M&E indicators into national disease surveillance and response system and health management information system(HMIS)	Meetings	2015-2017	Personnel allowances, fuel, stationery/venue
• Strengthen the reporting and response to severe adverse events ( SAEs) by leveraging on-going efforts to strengthen pharmacy vigilance systems in AFRO countries	Meetings	2015-2020	Personnel allowances, fuel, stationery/venue
<b>Strategic Objective 2: Strengthen the surveillance of NTDs and strengthen the response and control of epidemic (prone NTDs)</b>			
Disease surveillance	Establish sentinel sites for disease monitoring and evaluation	2015-2020	Allowance, Travel costs i.e. fuel, vehicle maintenance
	Conduct supervision for implementation of early warning system in epidemic districts	2015-2020	Allowance, Travel costs i.e. fuel, vehicle maintenance
	Conduct mid and end term programme evaluation	2015-2020	Allowance, Travel costs i.e. fuel, IEC materials
Cross border activities	Conduct cross border advocacy	2015-2020	Allowance, Travel costs i.e. fuel, vehicle maintenance
	Identify joint sentinel sites for disease surveillance and monitoring	2015-2020	Allowance, Travel costs i.e. fuel, Hall hire
	Conduct joint	2015-2015	Allowance, Travel costs i.e. fuel,

	community training and sensitisation		Hall hire and stationary
	Conduct joint workshop for information sharing and dissemination	2015-2020	Allowance, Travel costs i.e. fuel, Hall hire and stationary
	Initiate joint control activities during epidemic periods	2015-2020	Allowance, Travel costs i.e. fuel, vehicle maintenance
	Support cross border surveillance	2015-2020	Allowance, Travel costs i.e. fuel, vehicle maintenance
<b>Strategic Objective 3: Support operational research, documentation and evidence to guide innovative approaches to NTDs programme interventions.</b>			
Operational Research	Conduct a study on composition and distribution of vectors	2015-2020	Laboratory equipment and reagents, stationery, Allowance, fuel and vehicle maintenance
	Conduct epidemiological surveys for NTDs distribution and burden	2015-2020	Laboratory equipment and reagents, stationery, Allowance, fuel and vehicle maintenance
	Conduct KAP studies on NTDs	2015-2017	Stationery, Allowance, fuel and vehicle maintenance
	Assess impact of community directed treatment of Schistosomiasis and STHs on morbidity	2015-2020	Laboratory equipment and reagents, stationery, Allowance, fuel and vehicle maintenance
	Carry out surveys on vectors' dynamics and incrimination of reservoirs and their distribution	2015-2020	Laboratory equipment and reagents, stationery, Allowance, fuel and vehicle maintenance

	Assess environmental and human behavioural risk factors that predisposes to Hydatid infections	2015-2020	Stationery, Allowance, fuel and vehicle maintenance
<b>Strategic Objective 4: Establish integrated data management systems support and impact analysis for NTDs as part of the global NTDs data management system and global NTDs plan.</b>			
Conduct supportive supervision , monitoring and evaluation of NTDs control programme implementation	Produce integrated supervisory checklist at national, district and community levels	2015	Stationery, Hall hire, Allowance, fuel and vehicle maintenance
	Develop guidelines , referral and reporting forms for management of adverse effects	2015	Personnel allowances, fuel, hall hire, stationery/venue
	Develop and produce integrated NTDs recording and reporting forms for MDA	2015	Allowances, fuel, hall hire, stationery/venue
	Collection and analysis of treatment data	2015-2020	Allowances, fuel, hall hire, stationery/venue
	Conduct quarterly integrated supportive supervision of NTDs implementation activities at national, district level and community level	2015-2020	Aallowances, fuel, hall hire, stationery and venue

### 3.3.4. Post intervention surveillance and integration within Primary Health Care

The NTD Master plan will be implemented within existing health system. At all levels NTD indicators will be monitored by HIMS and IDSR. All NTD activities including post intervention surveillance will be included in District Implementation Plans.

In order to successfully maintain disease levels below thresholds where they are not of public health significance following intense period of interventions depends on how strong post-intervention surveillance by the primary health care is, as well as their ability to incorporate the surveillance and residual control activities in routine health care delivery.

**Table 27: Activities for surveillance and sustainability**

Activity	Details (Sub-activities)	Timeframe/ Frequency	Resources needed
<b>Objective</b> To ensure that surveillance and residual intervention activities are incorporated in routine health care delivery			
Sentinel site surveys/ LF	Integrated survey (mid year, post MDA evaluation surveys)	2015	Personnel allowances, fuel, Equipment/materials
Conduct surveillance	Train surveillance teams	2015	
	Develop surveillance tools and systems	2015	
Conduct supportive supervision	Develop monitoring tool	2015	
	Conduct integrated Training of H/workers on data collection and management	2015	
	Conduct integrated supervision	2015-2020	
Coverage surveys LF/Oncho	Integrated survey	2015	Personnel allowances, Fuel, Equipment / materials
Conduct surveys for STH, SCHISTO	<ul style="list-style-type: none"> <li>• Train laboratory personnel and assistants</li> <li>• Workshop for TOT</li> </ul>	2015	Personnel allowances, Fuel, Equipment / materials
Spot checks for mf	Integrated survey	2015	Personnel allowances, Fuel, Equipment/ materials
Spot-checks for serious adverse events	Integrated survey	2015	Personnel allowances, Fuel, Equipment/ materials
Active surveillance/Leprosy, Buruli Ulcers, leishmaniasis, HAT, Trachoma	Integrated survey	2015	Personnel allowances, Fuel, Equipment/ materials

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# BUDGET JUSTIFICATION AND ESTIMATES

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## ANNEXES

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The following are the proposed annexes to the plan of action that will provide justification for the budget estimates and support the various sections elaborated in the main body of the plan:

### **Part 1: Situation analysis**

- Annex 1.1: Summary population table
- Annex 1.2: Chart showing distances between major cities and district headquarters in the country;
- Annex 1.3: Organogram of the Ministry of Health and NTD National programme
- Annex 1.4: Table on available data on PCT-NTD distribution
- Annex 1.5: Table on available data on CM-NTD distribution
- Annex 1.6: Table on status of implementation of PCT NTD interventions
- Annex 1.7: Table on status of implementation of CM NTD interventions

### **Part 2: Strategic agenda and operational framework**

- Annex 2.1: Package of Mass drug administration
- Annex 2.2: Package of Case management and chronic care
- Annex 2.3: PCT algorithm 1
- Annex 2.4: PCT algorithm 2
- Annex 2.5: Algorithm for co-endemicity of CM-NTDs in countries of the African Region
- Annex 2.6 Package of Transmission control - vector/reservoir control
- Annex 2.7: Package of Improvement of Environment, Supply of safe drinking water, sanitation, and operational research
- Annex 2.8 “WHAT to do” by district (operational unit) by operational package
- Annex 2.9: Drug estimates and logistics.
- Annex 2.10: Drug forecasting and logistics.
- Annex 2.11: Summary of progressive scale up and phase out of PCT interventions package
- Annex 2.12: Results framework for the WHO-HQ-AFRO-APOC Strategic Plan, 2010–2015.

**Part 3 (optional)**

- Disease specific annexes.

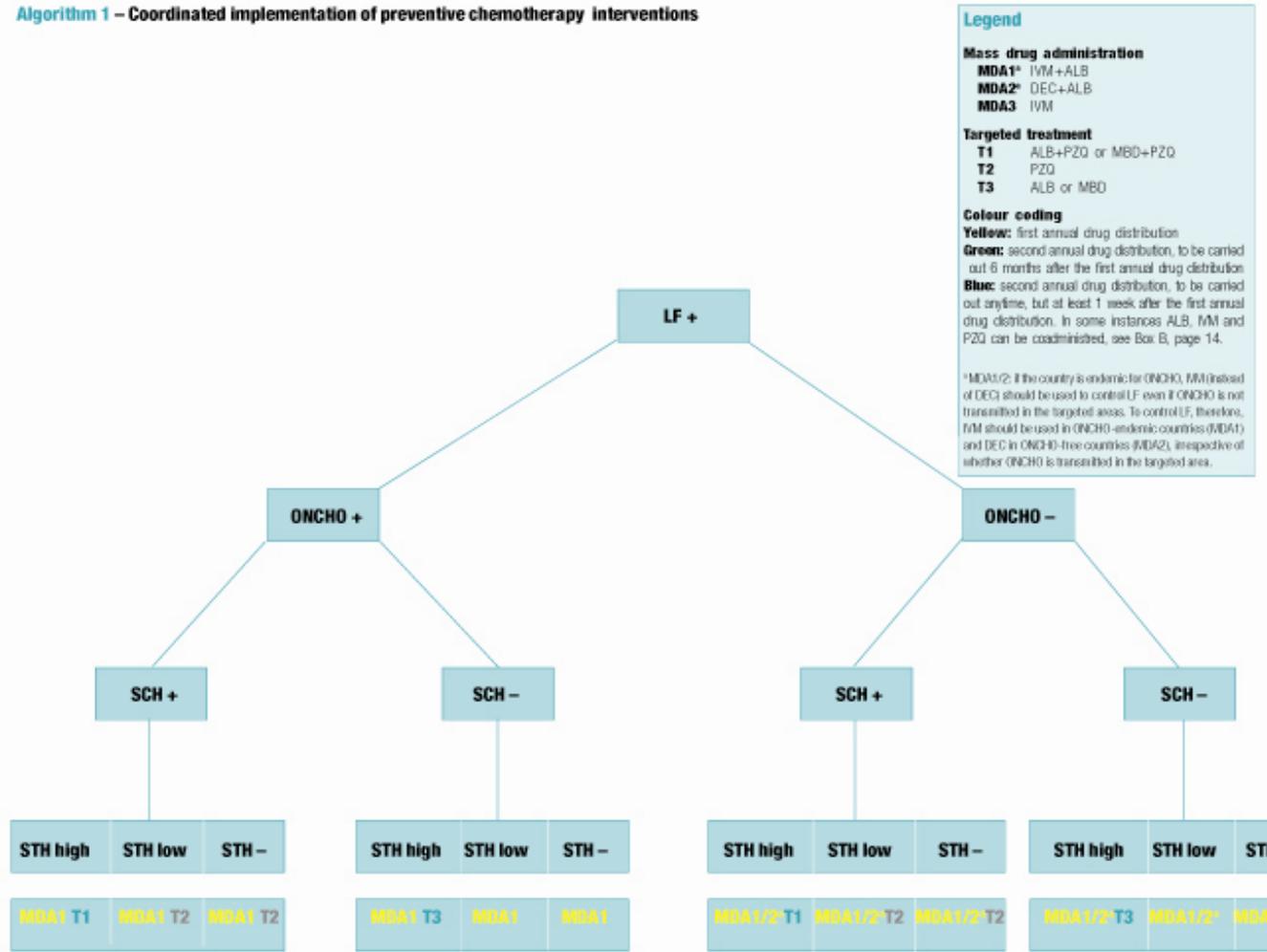
**Annex 1a: Packages of NTD interventions**

ACTIVITY		Schistosomiasis	STH	Oncho	Trachoma	LF	HAT	Leprosy
Community sensitization & social mobilization		X	X	X	X	X	X	X
Training		X	X	X	X	X	X	X
Mapping				X	X	X	X	
Health facility case management		X	X		X	X	X	X
Health promotion	Hand & face washing		X		X			X
	Building of latrines	X	X		X			
	Proper use of latrines	X	X		X			
	Behaviour change communication (hygiene & treatment seeking behaviour)	X	X	X	X	X	X	X
Drug distribution	Community health worker involvement	X	X	X	X	X	X	X
	School based	X	X		X		X	X
	Community based	X	X	X	X	X	X	X
	Mother and Child health week	X	X				X	
	School feeding	X	X		X		X	X
Disability prevention & management					X	X	X	X
Partnership of safe water		X	X		X		X	
Supply and sanitation improvement		X	X		X		X	X
Monitoring and Evaluation		X	X	X	X	X	X	X
Surveillance		X	X	X	X	X	X	X
Integrated vector management/animal reservoir control		X			X	X	X	
Operational research		X	X	X	X	X	X	X

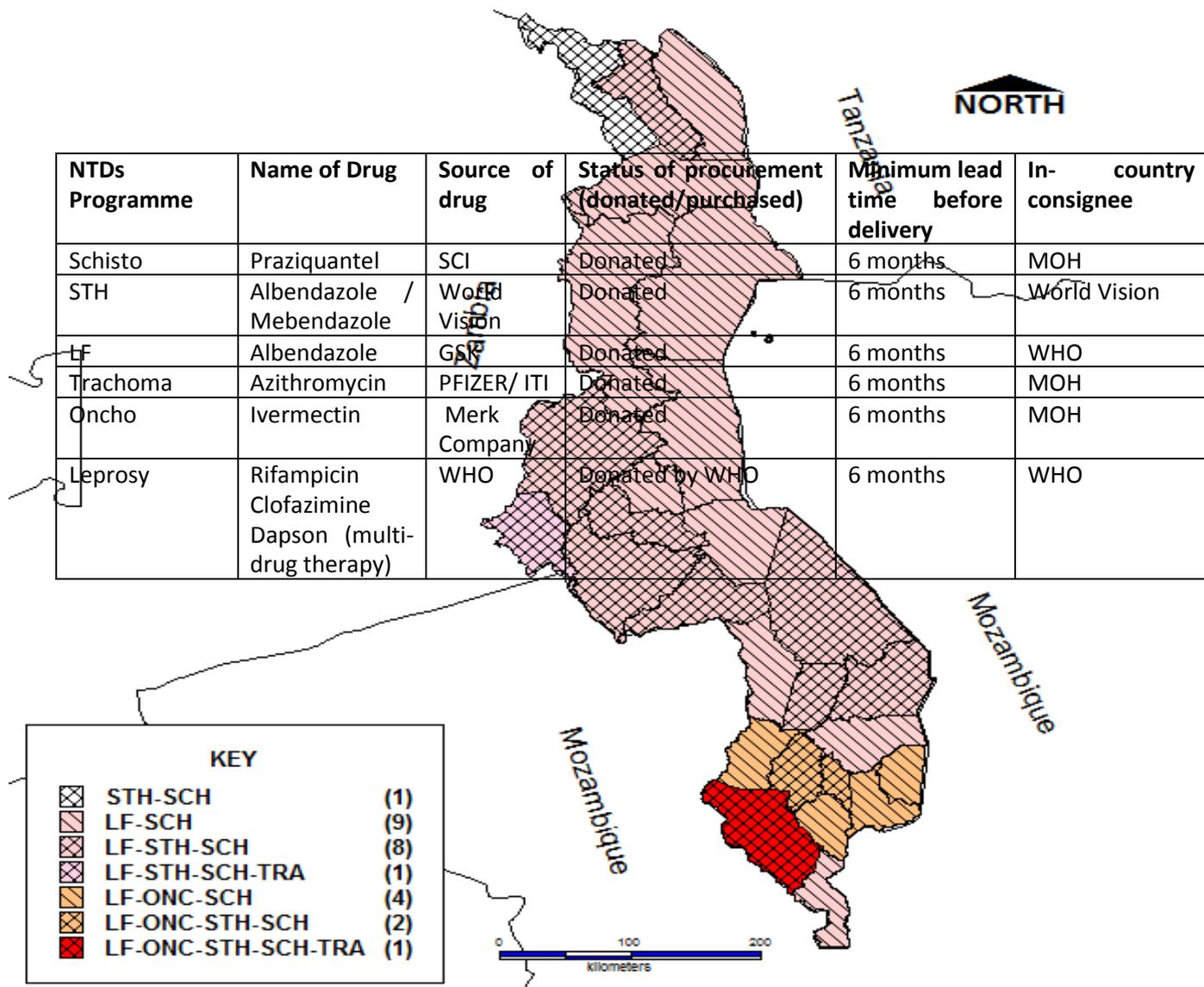
**Annex 1b: Table 4 showing NTD Co-endemicity by district**

**ANNEX 2: Algorithm 1**

Algorithm 1 – Coordinated implementation of preventive chemotherapy interventions



ANNEX 3: PCT Co- endemicity



**ANNEX 4: Information on drug procurements and logistics**

HAT	Melarsoprol Suramin	WHO	Donated by WHO	6 months	WHO
Buruli Ulcer	Rifampicin + streptomycin	MoH	Donated	6 months	MOH
Leishmaniasis	Sodium Stibogluconate / Meglumine Antimoniate	MoH	Procured by MoH	6 months	MOH

### **ANNEX 5: Summary of Progressive Scale –up of Preventive Chemotherapy Package**

	<b>Status of Interventions</b>	<b>Other PCT Disease – Specific Activities to be Added</b>
1	Schistosomiasis	Set up of integrated sentinel sites for Schisto and STH
2	Trachoma Mapping	Conduct Trachoma mapping in the remaining suspected 8 endemic districts
3	Trachoma Mass drug administration started	Conduct Trachoma MDA in the confirmed endemic districts
4	Oncho scaling down	Scale down Oncho specific activities in coordination with LF programme.

## Annex 6: Summaries output from Budgeting tool

FUNDING NEED & GAP		*		% of operational cost is dedicated for PC diseases and the rest is for CM diseases.						
		Assuming	60	2012		2013		2014		2015
Strategic Priority		Cost	Gap	Cost	Gap	Cost	Gap	Cost	Gap	
	Drug cost	1,331,442	1,331,442	1,341,040	1,341,040	1,407,047	1,407,047	1,446,444	1,446,444	1,446,444
1	Coordination, Partnership & Advocacy	345,950	294,750	383,725	383,725	330,685	330,685	378,775	378,775	
2	Resource Mobilization	83,900	63,850	45,500	45,500	59,250	59,250	28,750	28,750	
3	Scale-up interventions (PC diseases)	4,542,600	3,877,162	5,093,450	5,093,450	3,920,875	3,920,875	3,623,925	3,623,925	3,623,925
	Scale-up interventions (CM diseases)	3,145,200	2,835,200	524,400	524,400	509,400	282,450	590,900	288,700	
	Scale-up interventions (IVM, sanitation)	-	-	-	-	-	5,102,660	-	4,911,050	
4	M & E, Research	312,500	226,500	282,150	282,150	282,450	282,450	288,700	288,700	
<b>Total cost - PC diseases (with drug)</b>		<b>6,319,452</b>	<b>5,559,664</b>	<b>6,861,315</b>	<b>6,861,315</b>	<b>5,731,353</b>	<b>8,792,949</b>	<b>5,488,104</b>	<b>8,434,734</b>	<b>8,434,734</b>
<b>Total cost - PC diseases (w/o drug)</b>		<b>4,988,010</b>	<b>4,228,222</b>	<b>5,520,275</b>	<b>5,520,275</b>	<b>4,324,306</b>	<b>7,385,902</b>	<b>4,041,660</b>	<b>6,988,290</b>	<b>6,988,290</b>
<b>Total cost - CM diseases</b>		<b>3,442,140</b>	<b>3,069,240</b>	<b>808,950</b>	<b>808,950</b>	<b>778,354</b>	<b>2,592,468</b>	<b>869,390</b>	<b>2,531,610</b>	<b>2,531,610</b>

## Capital cost and annual compensation of national personnel

Item	2012		2013		2014		2015		
	Cost	Gap	Cost	Gap	Cost	Gap	Cost	Gap	
Capital cost + Annual compensation	210,000	190,000	140,000	140,000	30,000	30,000	-	-	

## PC DRUG NEED AND GAP for PC diseases

PC Drug	2012		2013		2014		2015		
	Need	Gap	Need	Gap	Need	Gap	Need	Gap	
Ivermectin (3mg tablets)	35,047,180	35,047,180	36,028,502	36,028,502	37,037,300	37,037,300	38,074,344	38,074,344	39,
DEC (100mg tablets)	-	-	-	-	-	-	-	-	
Praziquantel (600mg tablets)	12,358,163	12,358,163	12,358,163	12,358,163	13,059,908	13,059,908	13,425,586	13,425,586	13,
Albendazole (400mg tab)/Mebendazole (500mg tab)	11,682,393	11,682,393	12,009,501	12,009,501	12,345,767	12,345,767	12,691,448	12,691,448	13,
Albendazole (400mg tab)/Mebendazole (500mg tab)	16,836,168	16,836,168	17,307,581	17,307,581	17,792,193	17,792,193	18,290,375	18,290,375	18,
TEO (5mg tubes)	36,986	36,986	38,022	38,022	39,087	39,087	40,181	40,181	
Azithromycin POS (30ml bottles)	53,208	53,208	54,698	54,698	56,230	56,230	57,804	57,804	
Azithromycin (250mg tablets)	2,385,620	2,385,620	2,385,620	2,385,620	2,521,085	2,521,085	2,664,242	2,664,242	2,6

## PART I SITUATION ANALYSIS

**Annex 1.1. : Populations, Villages/communities, Children, Schools, and Health facilities per District and Province or Region**

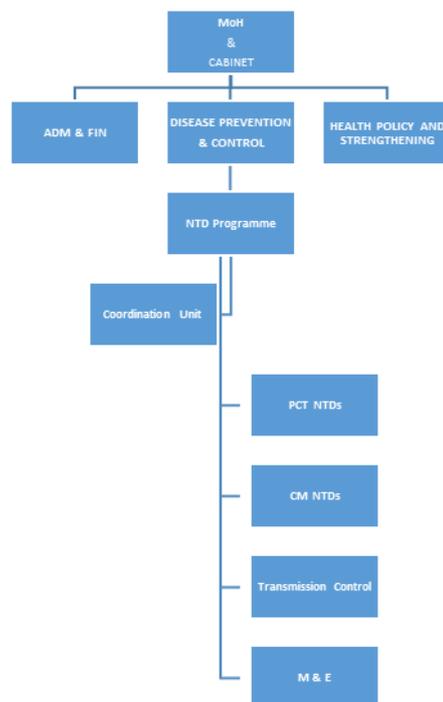
Province or region	District	No. of villages or communities*	Total population	Under fives	5–14 years	No. of primary schools	No. of health centres
Province or Region 1	District 1.1						
	District 1.2						
	District 1.3						
	District...						
	District...						
Total Region or Province 2							
Province or Region 1	District 2.1						
	District 2.2						
	District 2.3						
	District...						
Total Region or Province 2							
Province or Region 3	District 3.1						
	District 3.2						
	District 3.3						
	District...						
	District...						
Total Region or Province 3							
Province or Region 4	District 4.1						
	District 4.2						
	District 4.3						
	District...						
	District...						
Total Region or Province 4							
Province or Region 5	District 5.1						
	District 5.2						
	District 5.3						
	District...						
Total Region or Province 5							
TOTAL COUNTRY							

**Annex 1.2. : Distances between main cities and district headquarters of the country**

**Capital City**

340	<b>Town1</b>						
100	240	<b>Town2</b>					
350	690	450	<b>Town3</b>				
230	570	330	400	<b>Town4</b>			
170	470	320	250	330	<b>Town5</b>		
300	470	400	325	250	240	<b>Town6</b>	
350	550	300	200	150	150	400	<b>Town7</b>

**Annex 1.3: Organisational chart of the MoH and the NTD National Programme**



## Annex 1.4: Summary on available data of PCT-NTD distribution

Province or region	District or community*	Lymphatic filariasis	Onchocerciasis	Schistosomiasis	STH	Trachoma	Loa loa
Province or Region 1	District 1.1						
	District 1.2						
	District 1.3						
	District...						
	District...						
Total Region or Province 2							
Province or Region 1	District 2.1						
	District 2.2						
	District 2.3						
	District...						
Total Region or Province 2							
Province or Region 3	District 3.1						
	District 3.2						
	District 3.3						
	District...						
	District...						
Total Region or Province 3							
Province or Region 4	District 4.1						
	District 4.2						
	District 4.3						
	District...						
	District...						
Total Region or Province 4							
Province or Region 5	District 5.1						
	District 5.2						
	District 5.3						
	District...						
Total Region or Province 5							
TOTAL COUNTRY							

**Legend:**

**ND** (No data): if no information is available

**No**: Not endemic or below PCT intervention threshold

**Yes** or known **Prevalence rate** if endemic

\*Community is mainly for localised distribution of onchocerciasis and schistosomiasis.

In that case, state in bracket ( ) the number or endemic communities or villages within the District

## Annex 1.5: Summary on available data on CM-NTD distribution

Province or region	District or community*	Buruli ulcer	Guinea worm	HAT	Leishmaniasis	Leprosy	Rabies	Other
Province or Region 1	District 1.1							
	District 1.2							
	District 1.3							
	District...							
	District...							
Total Region or Province 2								
Province or Region 1	District 2.1							
	District 2.2							
	District 2.3							
	District...							
Total Region or Province 2								
Province or Region 3	District 3.1							
	District 3.2							
	District 3.3							
	District...							
	District...							
Total Region or Province 3								
Province or Region 4	District 4.1							
	District 4.2							
	District 4.3							
	District...							
	District...							
Total Region or Province 4								
Province or Region 5	District 5.1							
	District 5.2							
	District 5.3							
	District...							
Total Region or Province 5								
TOTAL COUNTRY								

**Legend:**

**ND** (No data): if no information is available

**No** for Not endemic or below elimination threshold

**Yes** or known **Prevalence rate** if endemic

\*Community is mainly for localised distribution of Guinea worm, which is targeted for eradication.

In that case, state in bracket ( ) the number or endemic communities or villages within the District

## Annex 1.6: Summary on status of implementation of PCT NTD interventions in districts

Province or region	District or community*	Lymphatic filariasis	Onchocerciasis	Schistosomiasis	STH	Trachoma	Loa loa**
Province or Region 1	District 1.1						
	District 1.2						
	District 1.3						
	District...						
	District...						
Total Region or Province 2							
Province or Region 1	District 2.1						
	District 2.2						
	District 2.3						
	District...						
Total Region or Province 2							
Province or Region 3	District 3.1						
	District 3.2						
	District 3.3						
	District...						
	District...						
Total Region or Province 3							
Province or Region 4	District 4.1						
	District 4.2						
	District 4.3						
	District...						
	District...						
Total Region or Province 4							
Province or Region 5	District 5.1						
	District 5.2						
	District 5.3						
	District...						
Total Region or Province 5							
TOTAL COUNTRY							

**Legend:** **ND** (No data): if no information is available

**No:** if no intervention is required

**MAP:** if mapping is planned or on-going

**PCT (1), PCT (2) ... PCT (10):** if MDA, CDTI or Targeted treatment is on-going. In bracket is the number of round being conducted. Examples: MDA1 (1) = 1<sup>st</sup> round of MDA1 (IVM+ALB), T2 (3) = 3<sup>rd</sup> round of T2 (PZQ in SAC), CDTI (7) = 7<sup>th</sup> round of IVM in communities for Onchocerciasis

\*\* Loa loa is only for mapping

## Annex 1.7: Summary on status of implementation of CM interventions in districts

Province or region	District or community*	Buruli ulcer	Guinea worm	HAT	Leishmaniasis	Leprosy	Rabies	Other
Province or Region 1	District 1.1							
	District 1.2							
	District 1.3							
	District...							
	District...							
Total Region or Province 2								
Province or Region 1	District 2.1							
	District 2.2							
	District 2.3							
	District...							
Total Region or Province 2								
Province or Region 3	District 3.1							
	District 3.2							
	District 3.3							
	District...							
	District...							
Total Region or Province 3								
Province or Region 4	District 4.1							
	District 4.2							
	District 4.3							
	District...							
	District...							
Total Region or Province 4								
Province or Region 5	District 5.1							
	District 5.2							
	District 5.3							
	District...							
Total Region or Province 5								
TOTAL COUNTRY								

**Legend:** **ND** (No data): if no information is available

**No:** if no active case finding is required (elimination goal is achieved at district level)

**ACF:** if active case finding is planned or on-going for assessing the disease burden and treating

**CM1:** if routine case finding and treatment are on-going in peripheral health facilities

**CM2:** if routine case finding and treatment are on-going and reference to higher levels (hospitals) is organised for confirmation of diagnosis, treatment and prevention of complications and disabilities

## PART II: OPERATIONAL FRAMEWORK

## Annex 2. 1: Package of Preventive Chemotherapy (PCT) - Mass drug administration (MDA)

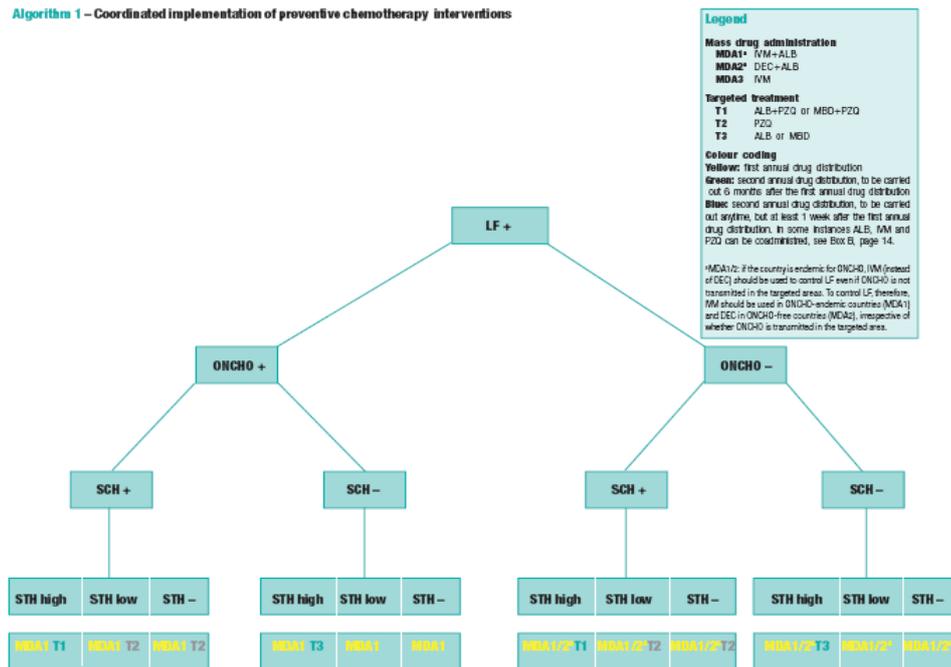
Activity		Lymphatic Filariasis	Onchocerciasis	Schistosomiasis	STH	Trachoma
Programme coordination		X	X	X	X	X
Advocacy		X	X	X	X	X
Resource mobilization		X	X	X	X	X
Social mobilization		X	X	X	X	X
Training		X	X	X	X	X
Mapping		X	X	X	X	X
Drug distribution	CDTI	X	X	X	X	X
	School			X	X	
	MDA campaign	X		X	X	X
	Child health day				X	X
	Immunization campaign			X	X	X
	Health and nutrition day	X		X		
HSAM		X	X	X	X	X
M&E		X	X	X	X	X

## Annex 2.2: Package of Case management (CM) and chronic care

Key interventions	Diseases / conditions										
	GW	Leprosy	YAWS	HAT	LEISH	BU	Complications LF	TRICHIA SIS	Rabies	ECCH	CYST
Advocacy/resource mobilization	x	x	x	x	X	x	x	x	x	x	X
Strengthening partnership	x	x	x	x	X	x	x	x	x	x	X
Intersectoral collaboration	x	x	x	x	X	x	x	x	x	x	X
Health promotion	x	x	x	x	X	x	x	x	x	x	X
Capacity building	x	x	x	x	X	x	x	x	x	x	X
Mapping	x	x	x	x	X	x	x	x	x	x	X
Passive case finding	x	x	x	x	X	x	x	x	x	x	X
Active case finding				x	X	x	x				
Medical treatment	x	x	x	x	X	x	x	x			
Surgery		x				x	x	x			
Prevention of disability		x				x	x				
Integrated vector management/ reservoir control	x			x	X						
Surveillance	x	x	x	x	X	x	x	x	x	x	X

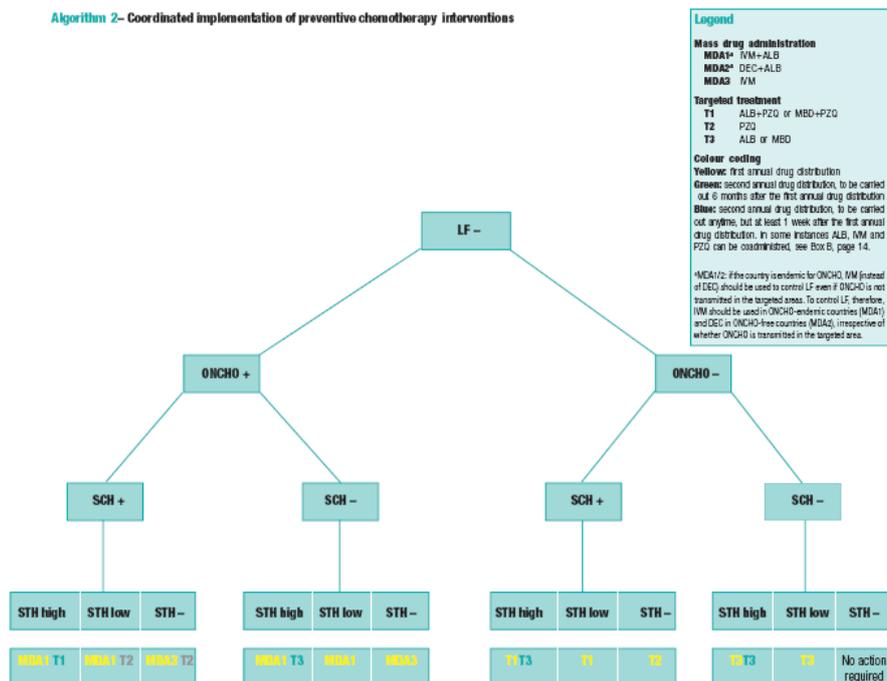
### Annex 2. 3: PCT algorithm 1

Algorithm 1 – Coordinated implementation of preventive chemotherapy interventions



### Annex 2.4: PCT algorithm 2

Algorithm 2 – Coordinated implementation of preventive chemotherapy interventions



## Annex 2.6 Package of Transmission control - vector/reservoir control

Activity	Vectors and Associated NTDs						
	Mosquitoes			Other Vectors			
	LF	Dengue	Malaria	Snails	Black fly	Sand fly	Tsetse fly
				Schisto	Oncho	Leish	HAT
ITN	X	X	X			X	-
IRS	X	X	X			X	
Space spraying					X		X
Larviciding	X	X	X		X		
Traps							X
Prevention/treatment of breeding sites	X	X	X	x	x	??	

## Annex 2.7: Package of Improvement of Environment, Supply of safe drinking water, sanitation, and operational research

Activity	LF	Oncho	SCH	STH	Trach	LEP	Leish	HAT	GW	BU	Rabies	Dengue
Partnership for water supply improvement			X	X	X				X			
Partnership for sanitation improvement			X	X	X							
Social mobilization	X	X	X	X	X	X	X	X	X	X	X	X
Health promotion	X	X	X	X	X	X	X	X	X	X	X	X
Operational research	X	X	X	X	X	X	X	X	X	X	X	X

## Annex 2.8: “WHAT to do” by district (operational unit) by operational package

Province or region	District or community*	PCT-NTDs		CM-NTDs		PCT & CM NTDs			NTDs Targeted for Elimination or Eradication	
		MAP	PCT	ACF	CM1+2	IVM	SWS	IoE	SURV	VERIF
Province or Region 1	District 1.1									
	District 1.2									
	District 1.3									
	District...									
	District...									
Province or Region 1	District 2.1									
	District 2.2									
	District 2.3									
	District...									
Province or Region 3	District 3.1									
	District 3.2									
	District 3.3									
	District...									
	District...									
Province or Region 4	District 4.1									
	District 4.2									
	District 4.3									
	District...									
	District...									
Province or Region 5	District 5.1									
	District 5.2									
	District 5.3									
	District...									

**LEGEND:**

**MAP**= Mapping; **PCT**= MDA, CDTI and Targeted Treatment; **ACF**= Active Case finding;  
**CM1+2**= Routine case finding and treatment in HF1 (peripheral) and HF2 (reference hospitals); **IVM**=  
Integrated Vector Management; **SSWS**= Sanitation and Safe drinking Water Supply;  
**IoE**= Improvement of Environment; **SURV**= Surveillance; **VERIF**= Verification

**Annex 2.9: Drug estimates and logistics**

NTD programme	Drug	Source drug	Status of procurement (donated or purchased)	Minimum lead time before delivery	In-country consignee
LFE, oncho	IVM				
LFE	DEC				
LEPROSY	MDT blister packs	WHO, Novartis	Donated	6 months	National programme
HAT	Pentamidine/Melarsoprol NEC/DFMO				

**Annex 2.10: Drug forecasting and logistics**

Drug	Source of drug	Status of procurement (donate/purchased)	Minimum Lead time before delivery	In-country Consignee
IVM				
DEC				
ALB				
MEB				
PZQ				
AZI				

- Complete the following table to describe how essential NTD drug supplies will be obtained.
- Identify sources of drugs (procured or donated)
- Describe management, logistics and monitoring system for delivering drugs to field distributions sites.

**Annex 2.11: Summary of progressive scale up and phase out of PCT interventions package**

	Status of interventions	Other PCT-NTD specific activities to be added
1	LFE Mass drug administration started	Set up sentinel sites for STH impact evaluation Coordinate LF MDA with 2nd round of STH MDA, through school based approach, where prevalence is high (>50%). Assess schistosomiasis endemicity, if endemic; coordinate LF MDA with praziquantel treatment jointly with 2nd round of STH MDA. If only schistosomiasis is endemic or STH prevalence is low (<50%), coordinate with school based MDA for schistosomiasis.
2	LF MDA planned	-Map schistosomiasis and STH (also trachoma and onchocerciasis if applicable) -Collect baseline for LF, schistosomiasis and STH -Coordinate timing of delivery of MDA through community-based and school-based approaches appropriately.
3	LF not mapped	-Carry out integrated mapping with any of the five PCT diseases and Loa loa, where these are suspected. <i>Note: for some situations, LF mapping may need to be prioritized and carried out separately.</i> -Where LF is endemic, to proceed as in 2 above.
4	LF not endemic	-Proceed as in 2 above
5	LF MDA phasing out	-Evaluate STH endemicity status and follow STH guidelines -where onchocerciasis is co-endemic, continue ivermectin distribution and follow guidelines for onchocerciasis control.

**Annex 2.12: Results framework for the WHO-HQ-AFRO-APOC Strategic Plan, 2010–2015**

Strategic priorities	Strategic objectives	Core indicators
1 Strengthen advocacy, coordination and partnerships	<ol style="list-style-type: none"> <li>I. Strengthen coordination mechanisms for the NTD control programme at regional, national and subnational levels in the African Region;</li> <li>II. Strengthen and foster partnerships for the control, elimination and eradication of targeted NTDs at regional, national, district and community levels;</li> <li>III. Enhance high level reviews of NTD programme performance and the use of lessons learnt to enhance advocacy, awareness and effective implementation of targeted interventions;</li> <li>IV. Strengthen advocacy, visibility and profile of NTD control elimination and eradication interventions at all levels in the African Region.</li> </ol>	<ul style="list-style-type: none"> <li>• Minutes of high-level NTD coordination meetings in countries;</li> <li>• Minutes of partnership events on NTDs;</li> <li>• Number of high level advocacy events on NTDs;</li> <li>• Number of partners involved in NTD programme.</li> </ul>
2 Enhance resource mobilization and planning for results in NTD control	<ol style="list-style-type: none"> <li>I. Support countries to develop integrated multiyear strategic plans and gender-sensitive annual operational plans for the control, elimination and eradication of targeted NTDs</li> <li>II. Enhance resource mobilization approaches and strategies at regional, national and sub-national levels for NTD interventions</li> <li>III. Strengthen the integration and linkages of NTD programme and financial plans into sector-wide and national budgetary and financing mechanisms</li> <li>IV. Support countries to develop and update national NTD policies and elaborate guidelines and tools to guide effective policy and programme implementation</li> </ol>	<ul style="list-style-type: none"> <li>• Number of countries with updated national integrated NTD strategic plans;</li> <li>• Number of NTD guidelines and NTD planning and implementation tools developed;</li> <li>• Number of countries with adapted national guidelines and tools;</li> <li>• Presence of NTD budget line;</li> <li>• Total amount of financial resources available for NTD activities;</li> <li>• Percentage of planned NTD funds received.</li> </ul>
3 Scale up access to interventions, treatment and NTD service delivery capacity, within the overall health system	<ol style="list-style-type: none"> <li>I. Scale up an integrated preventive chemotherapy, including access to interventions for lymphatic filariasis, soil transmitted helminthiasis, onchocerciasis, schistosomiasis and trachoma;</li> <li>II. Scale up integrated case-management-based disease interventions, especially do the following: <ol style="list-style-type: none"> <li>a. Accelerate leprosy elimination activities;</li> <li>b. Intensify guinea worm eradication and surveillance activities in order to interrupt transmission in the three remaining endemic countries in the shortest time possible;</li> <li>c. Enhance HAT control interventions for human African trypanosomiasis;</li> <li>d. Strengthen national programmes to control Buruli ulcer and endemic treponematosi;</li> <li>e. Strengthen leishmaniasis control and human rabies prevention;</li> </ol> </li> <li>III. Strengthening integrated vector management for targeted NTDs.</li> <li>IV. Strengthen capacity at the national level for NTD programme management and implementation and accelerate implementation of disease burden assessments and integrated mapping of NTDs;</li> </ol>	<ul style="list-style-type: none"> <li>• Number of countries with completed integrated mapping of NTDs;</li> <li>• Drug administration coverage;</li> <li>• National coverage;</li> <li>• Parasitological prevalence;</li> <li>• Percentage of disease-specific targets achieved.</li> </ul>
4 Enhance NTD monitoring and evaluation, surveillance and operations research	<ol style="list-style-type: none"> <li>I. Develop and promote an integrated NTD M&amp;E framework and improve monitoring of NTDs, within the context of national health information systems. This will include strengthening the reporting and response to severe adverse events (SAEs) by leveraging on-going efforts to strengthen pharmacy vigilance systems in the African Region;</li> <li>II. Strengthen surveillance of NTDs and strengthen response and control of epidemic-prone NTDs, in particular dengue and leishmaniasis;</li> <li>III. Support operational research, documentation and evidence to guide innovative approaches to NTD programme interventions;</li> <li>IV. Establish integrated data management systems and support impact analysis for NTD in the WHO African Region as part of the global NTD data management system and global NTD plan.</li> </ol>	<ul style="list-style-type: none"> <li>• NTD data completeness and timeliness;</li> <li>• Number of evaluation studies conducted and results disseminated;</li> <li>• Number of operational research studies conducted and results disseminated;</li> <li>• A functional data management system.</li> </ul>